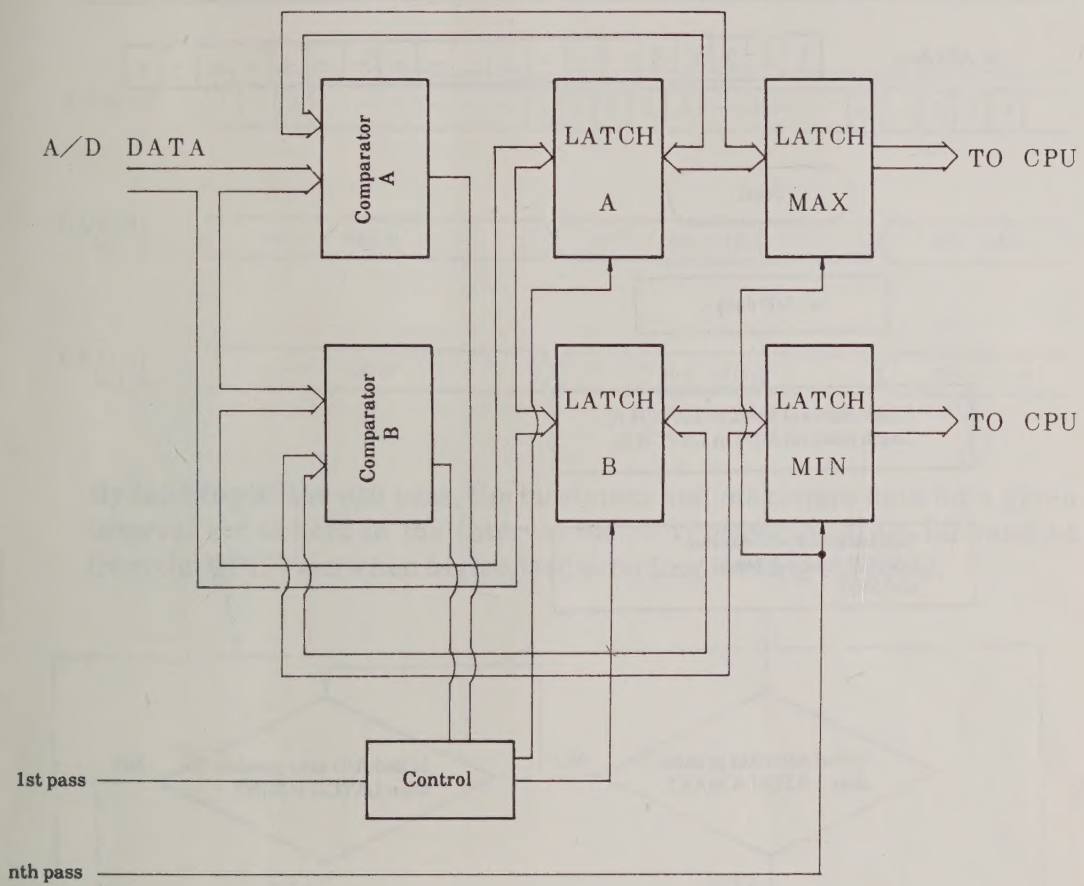
THERMAL ARRAYCORDER
WR3600

SERVICE MANUAL

GRAPHTEC

- Reference A Digital Comparator



Comparator A

The A/D data is compared with the maximum value thus far.

Comparator B

The A/D data is compared with the minimum value thus far.

LATCH A

In the first pass, A/D data is latched, after which only maximum values are latched in the order determined by signals output from Comparator A.

LATCH B

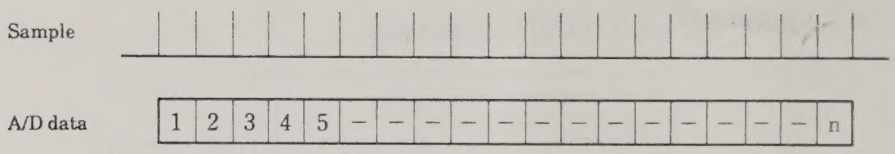
In the first pass, A/D data is latched, after which only minimum values are latched in the order determined by signals output from Comparator B.

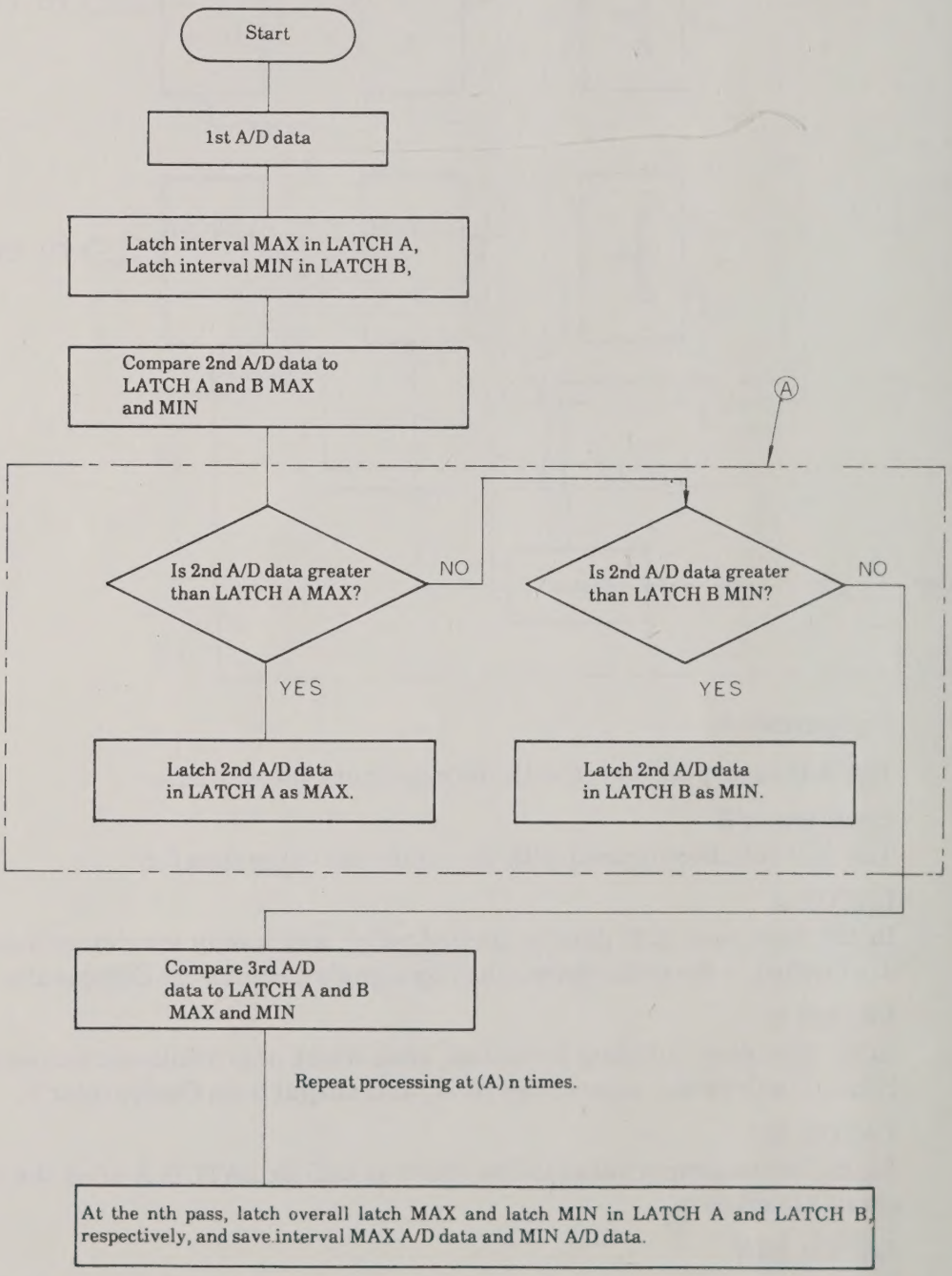
LATCH MAX

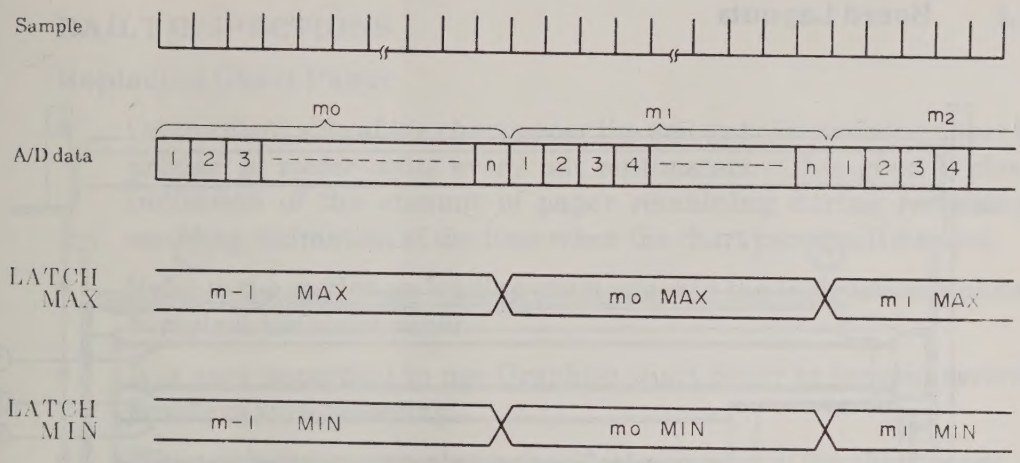
Latch the maximum value in the interval held in LATCH A after the nth sample is taken.

LATCH MIN

Latch the minimum value in the interval held in LATCH B after the nth sample is taken.

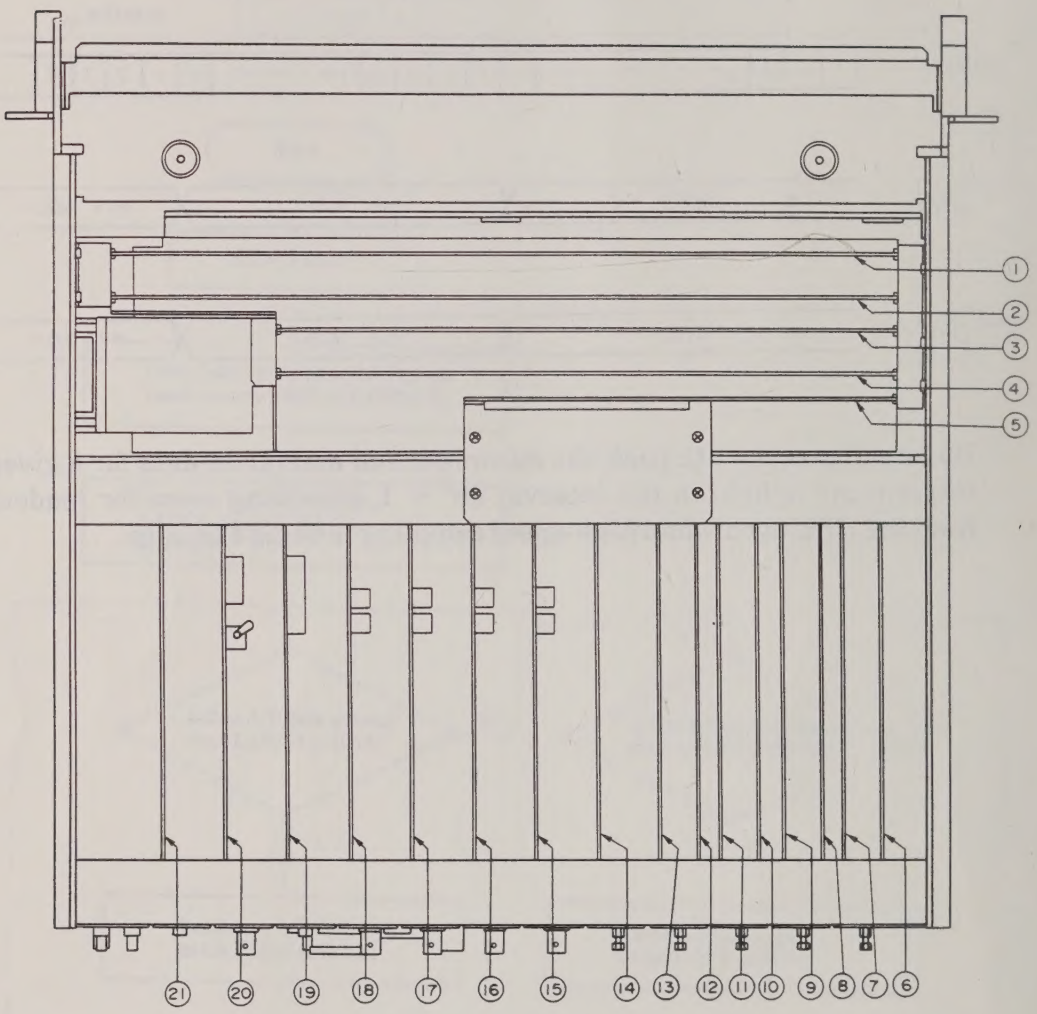

Sample
A/D data
1
2
3
4
5
n


Start
1st A/D data
Latch interval MAX in LATCH A,
Latch interval MIN in LATCH B,
Compare 2nd A/D data to
LATCH A and B MAX
and MIN
A
Is 2nd A/D data greater
than LATCH A MAX?
NO
YES
Latch 2nd A/D data
in LATCH A as MAX.
Is 2nd A/D data greater
than LATCH B MIN?
NO
YES
Latch 2nd A/D data
in LATCH B as MIN.
Compare 3rd A/D
data to LATCH A and B
MAX and MIN
Repeat processing at (A) n times.
At the nth pass, latch overall latch MAX and latch MIN in LATCH A and LATCH B,
respectively, and save interval MAX A/D data and MIN A/D data.



By latching at the nth pass, the minimum and maximum data for a given interval mℓ is held in the interval mℓ + 1, providing room for readout from the CPU even when high-speed sampling is being executed.

1.5 Board Layouts



①	PR3600-102 Slave CPU	⑪	Memory Board B
②	PR3600-02 Master CPU	⑫	Comparator B
③	PR3600-03 Master Head Driver	⑬	Comparator A
④	PR3600-03 Slave Head Driver	⑭	Memory Control
⑤	PR3600-04 Chart Driver	⑮ to ⑱	A/D Board
⑥	PR3600-06 Memory Board A	⑲	I/F Remote
⑦	PR3600-106 Memory Board B	⑳	I/F IRIG
⑧	PR3600-07 Comparator B	㉑	I/F RS 232C or GPIB
⑨	PR3600-08 Comparator A		
⑩	PR3600-06 Memory Board A		

2. DAILY INSPECTIONS

2.1 Replacing Chart Paper

- On the right side of the chart paper the amount of remaining paper is printed in meter units every ten centimeters. This gives a clear indication of the amount of paper remaining during recording, enabling estimation of the time when the chart paper will run out.
- Refer to the section on loading chart paper in the Instruction Manual to replace the chart paper.
- It is very important to use Graphtec chart paper to prevent serious problems with recording.
- When ordering paper, please specify the number of the chart paper.
- It is important to store chart paper in a location with low humidity.

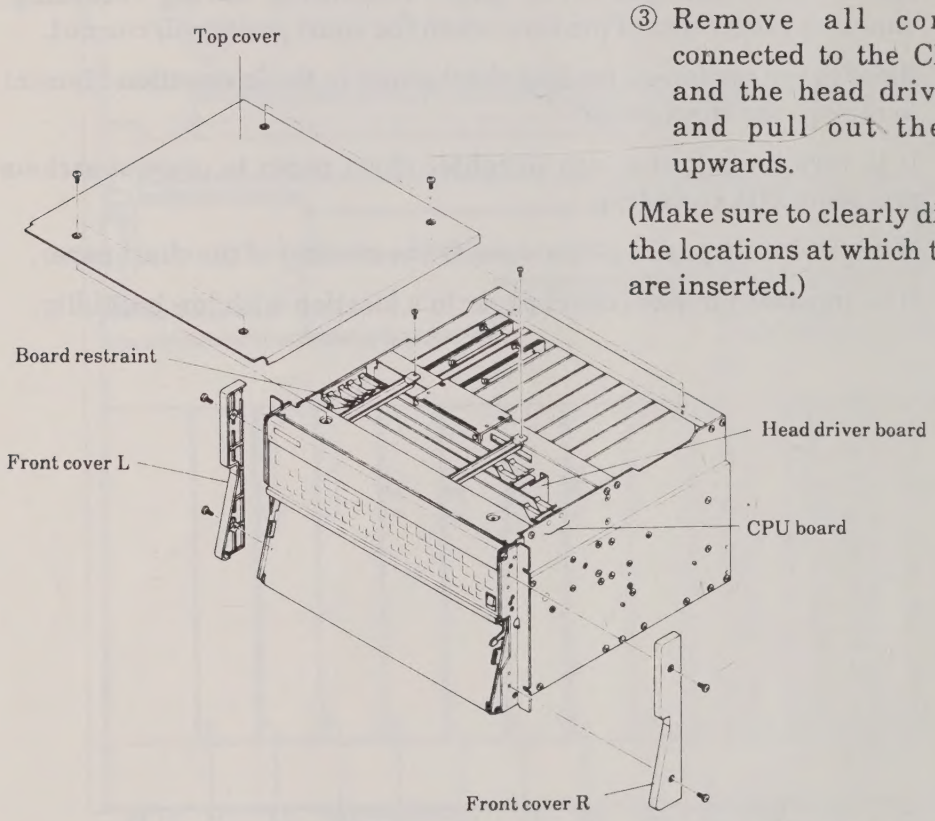
3. THERMAL HEAD REPLACEMENT

① Remove the top cover and the right and left front covers.

② Remove the two board restrainers.

③ Remove all connectors connected to the CPU board and the head driver board, and pull out the boards upwards.

(Make sure to clearly distinguish the locations at which the boards are inserted.)



④ Remove the thermal head connector from the mother board.

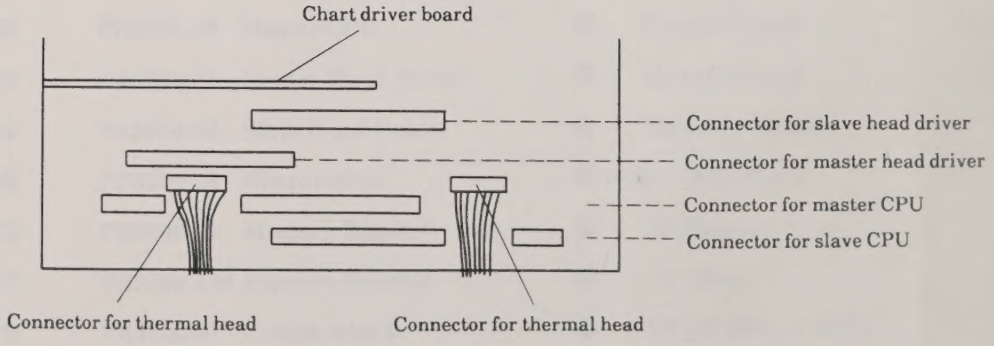
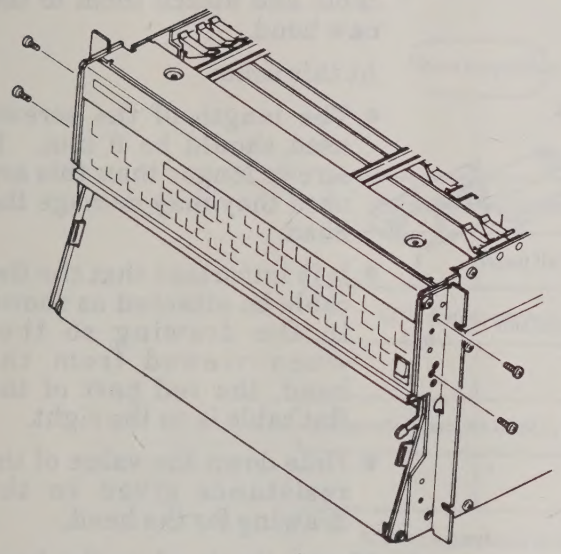
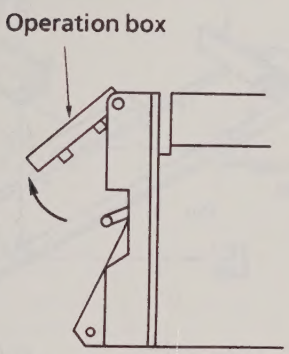
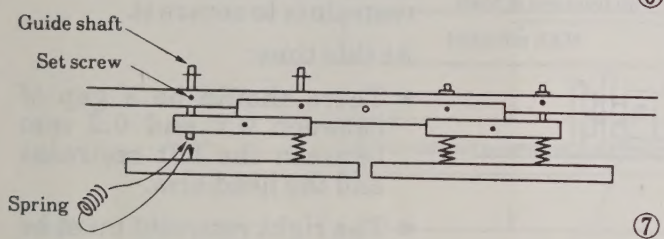


Chart driver board
Connector for slave head driver
Connector for master head driver
Connector for master CPU
Connector for slave CPU
Connector for thermal head
Connector for thermal head



⑤ Remove the (M3) operation box set screws at the left and right at two locations each, and open the operation box forward and upward.

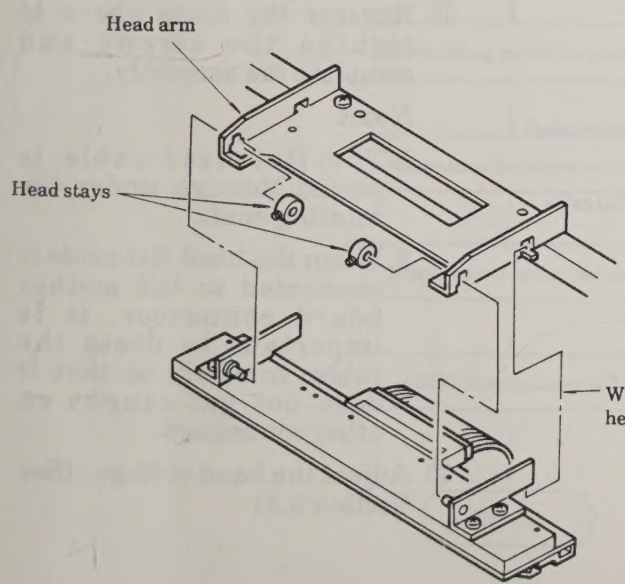


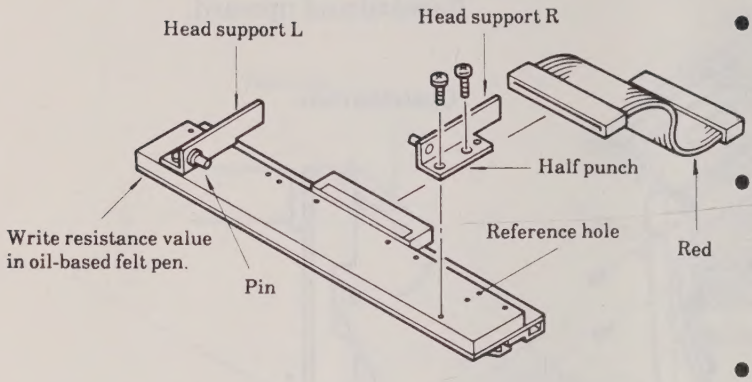


⑥ Loosen the set screw at the square support at the top of the head, raise the spring guide shaft, and temporarily tighten it (four locations), then remove the spring.

⑦ Loosen the set screws of the head restraints (one each at left and right for each head), and pull them out inwards.

⑧ While raising the head arm, pull down the thermal head to remove it.

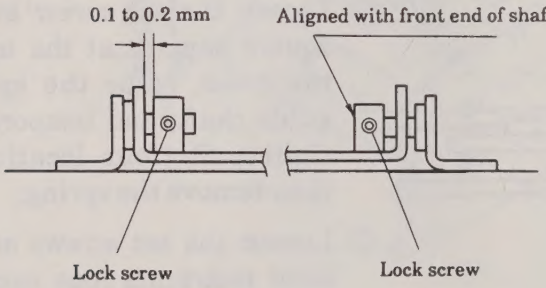




⑨ Remove the head supports at right and left and the flat cable and attach them to the new head.

At this time:

- The length of the screws used should be 6 mm. If screws longer than this are used they may damage the head.
- It is important that the flat cable be attached as shown in the drawing so that when viewed from the head, the red part of the flat cable is on the right.
- Note down the value of the resistance given in the drawing for the head.



⑩ Mount the head to the head arm, and use the head restraints to secure it.

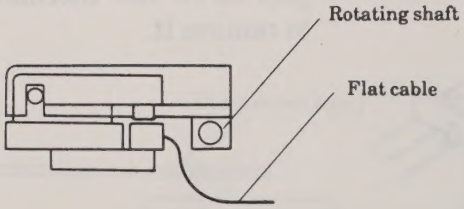
At this time:

- There should be a gap of between 0.1 and 0.2 mm between the left restraint and the head arm.
- The right restraint must be aligned with the front tip of the shaft.

⑪ Reverse the steps above to tighten the screws and complete the assembly.

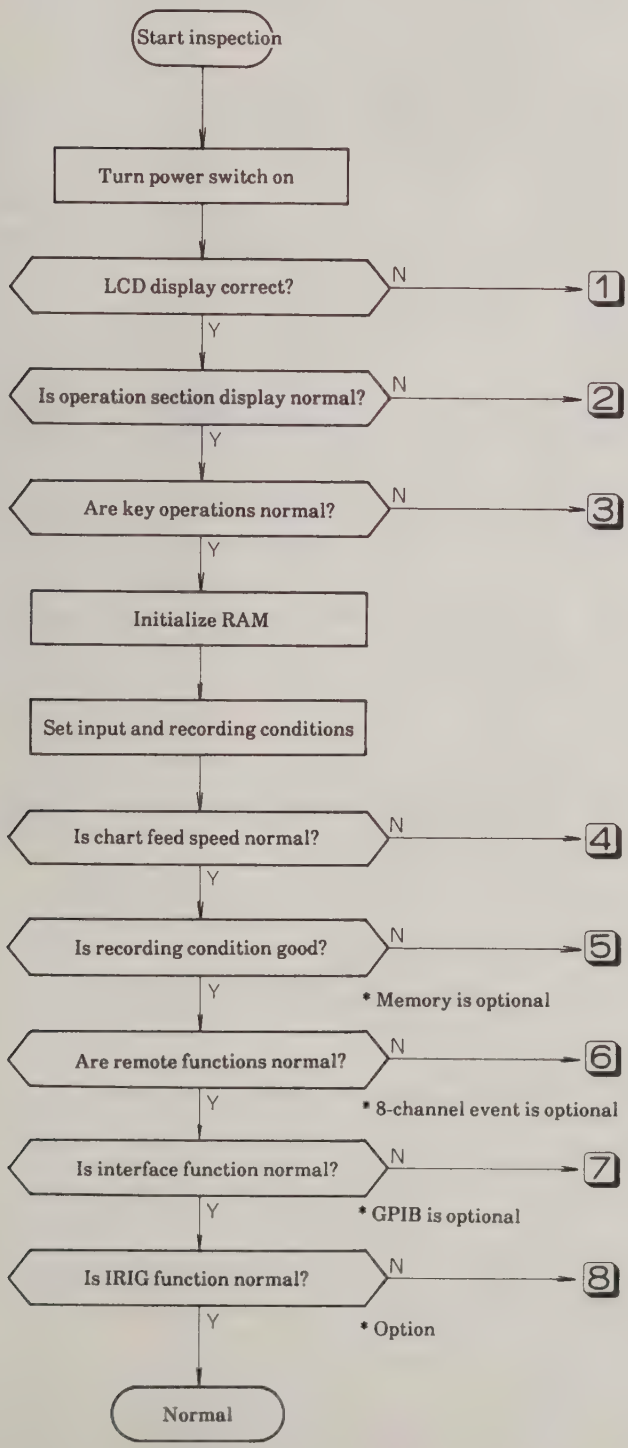
Notes

1. The flat head cable is passed through under the rotating shaft.
2. When the head flat cable is connected to the mother board connector, it is important to dress the cables correctly so that it does not get caught on other connectors.

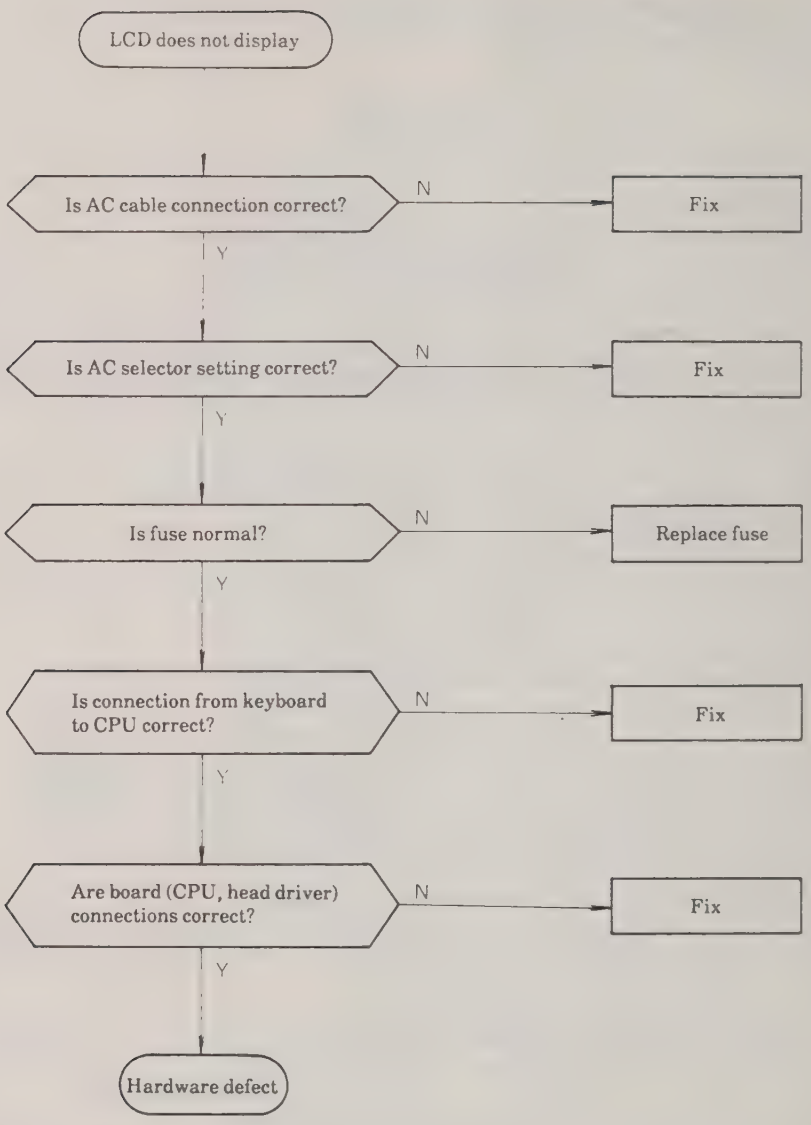


⑫ Adjust the head voltage. (See Section 5.4)

4. TROUBLESHOOTING FLOW CHARTS

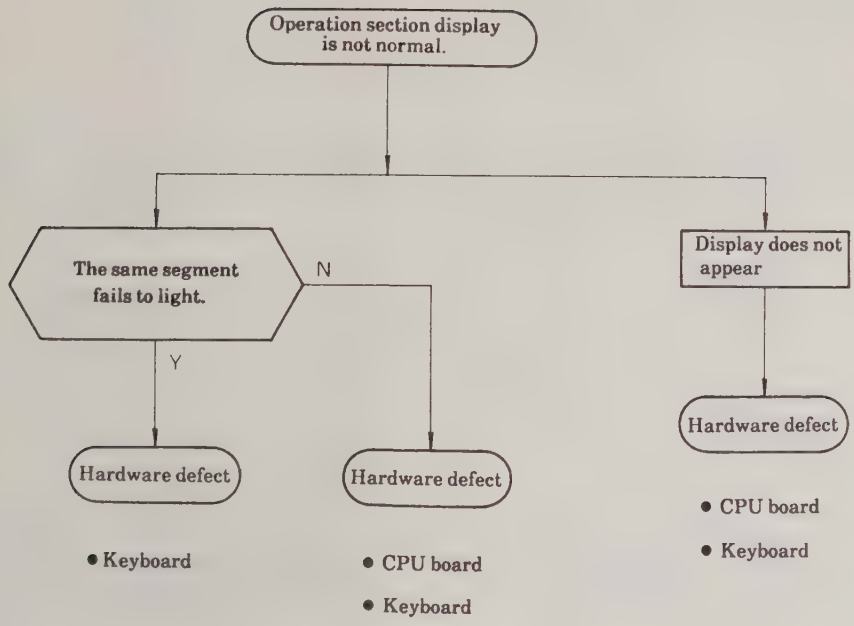


1

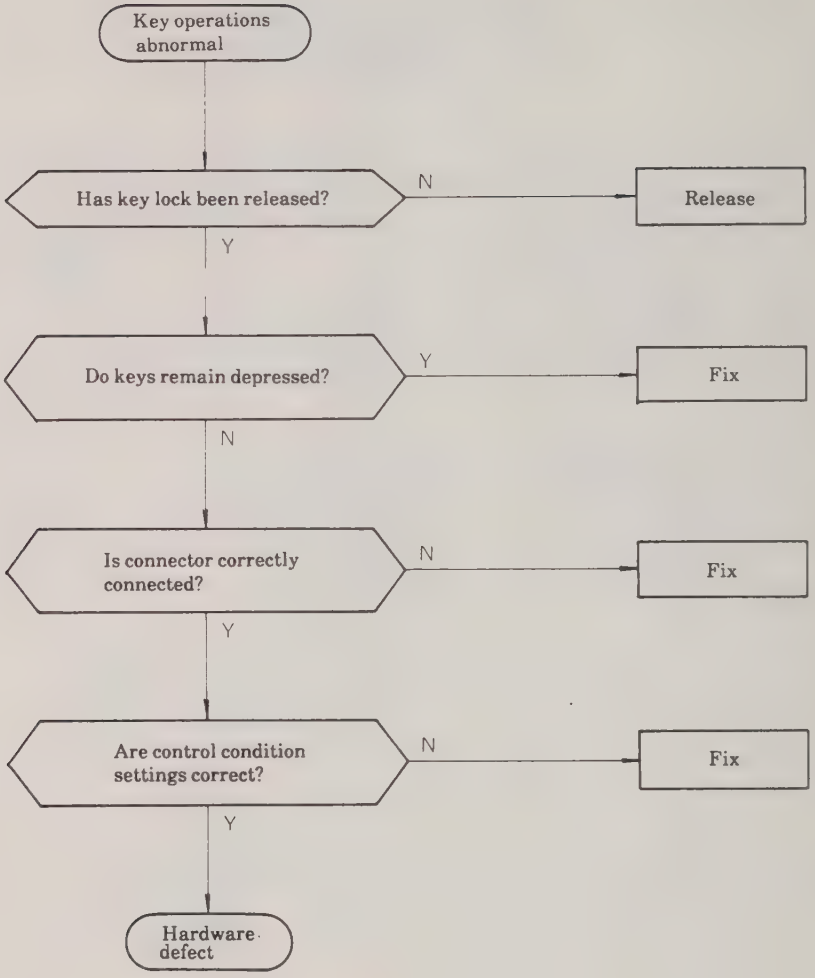


- Master CPU
- LCD

2

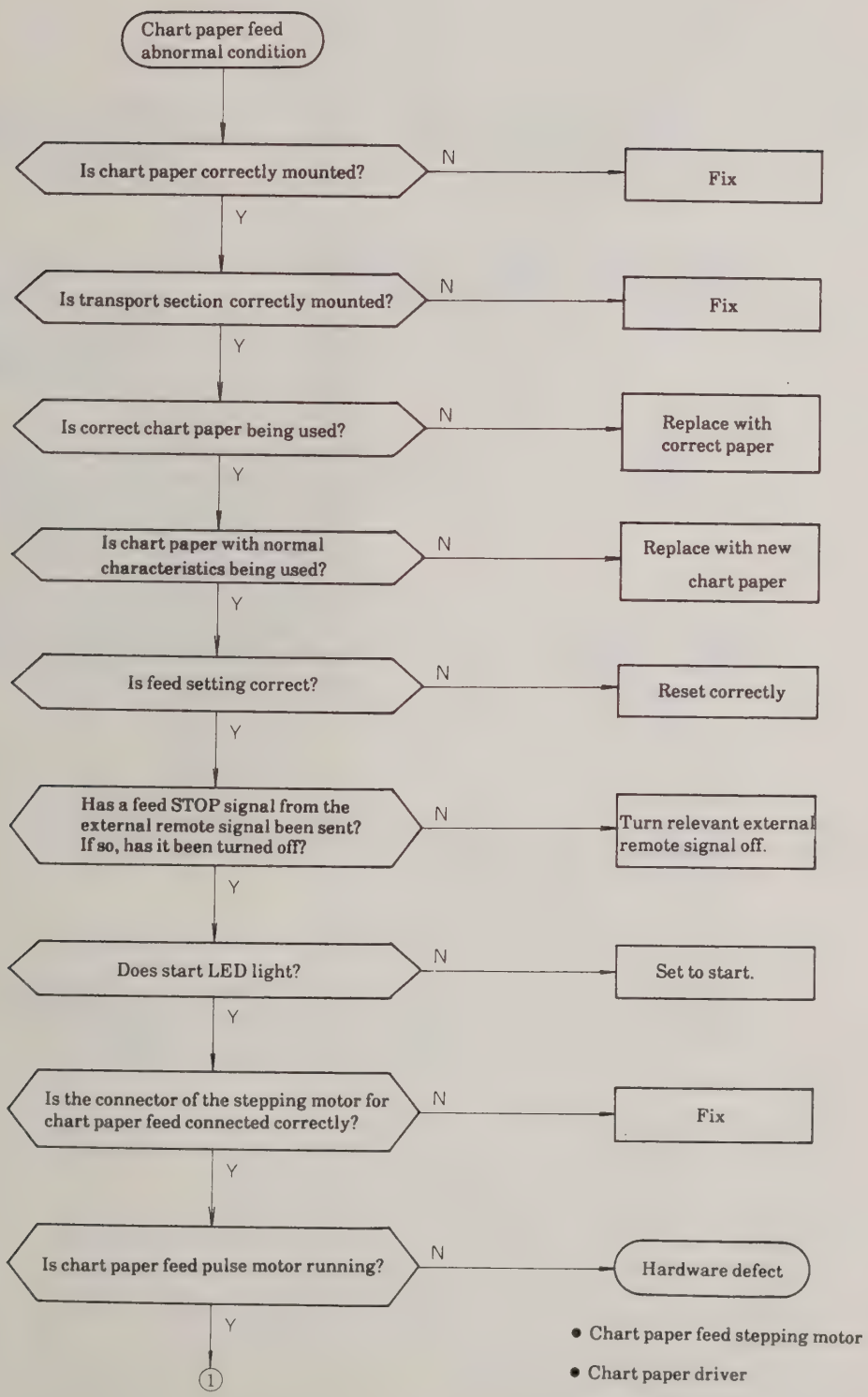

Operation section display is not normal.
The same segment fails to light.
N
Y
Display does not appear
Hardware defect
Hardware defect
Hardware defect
• Keyboard
• CPU board
• Keyboard
• CPU board
• Keyboard

3

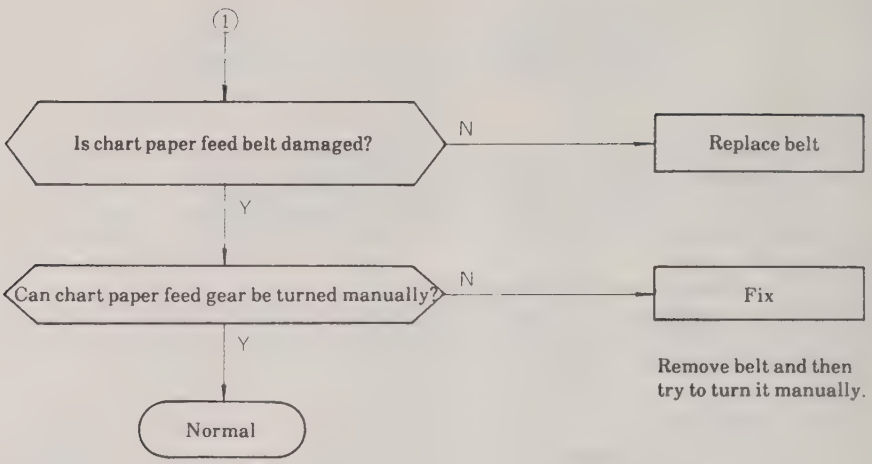


- CPU board
- Keyboard

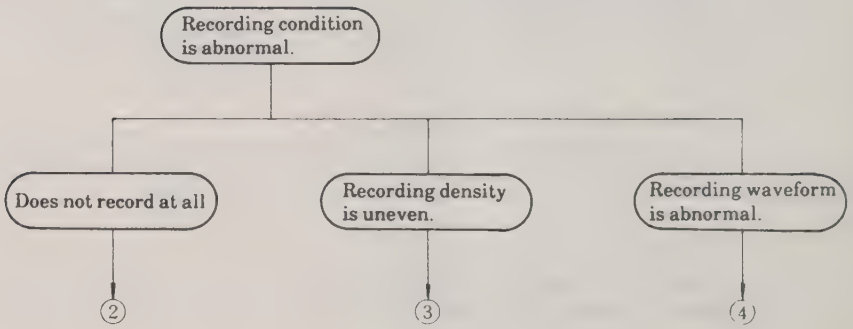
4

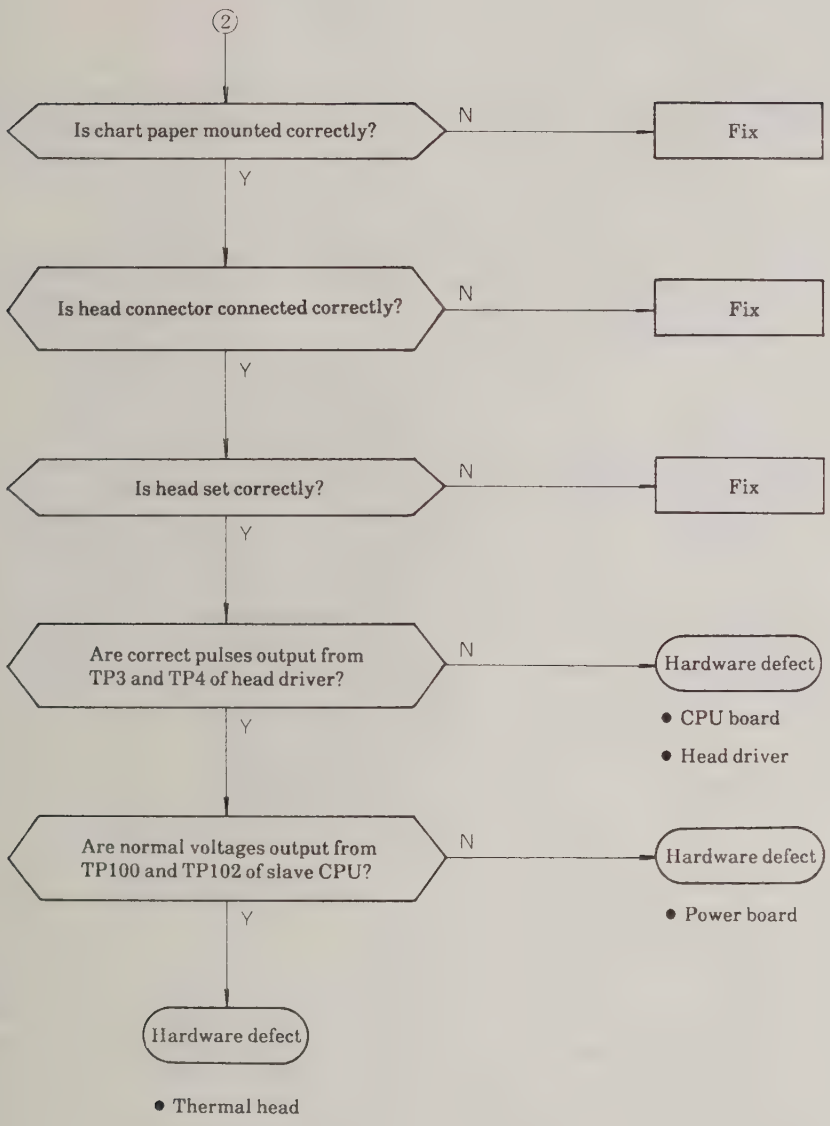


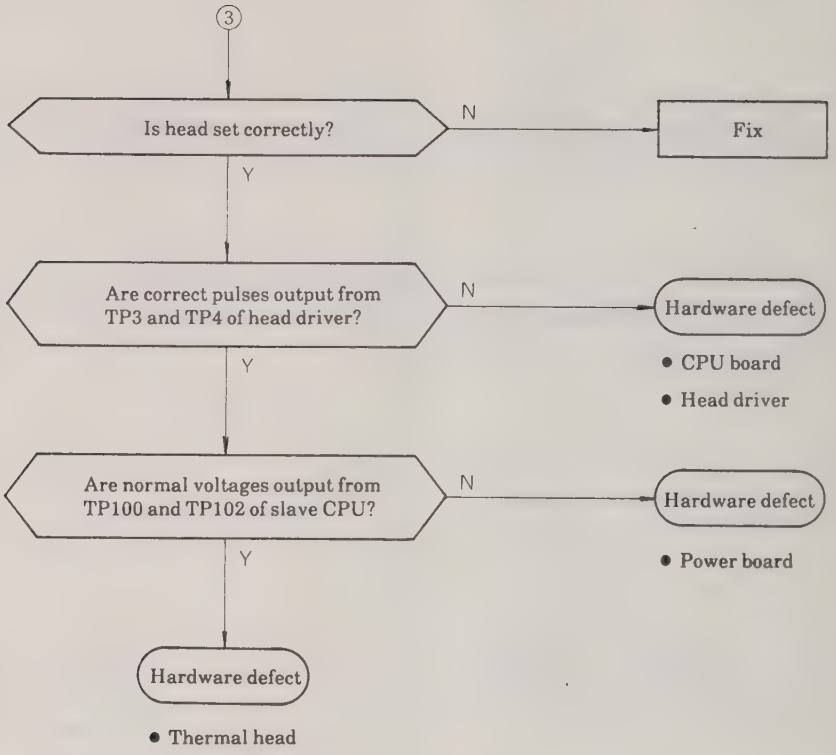
- Chart paper feed stepping motor
- Chart paper driver
- Master CPU
- Chart paper feed gear

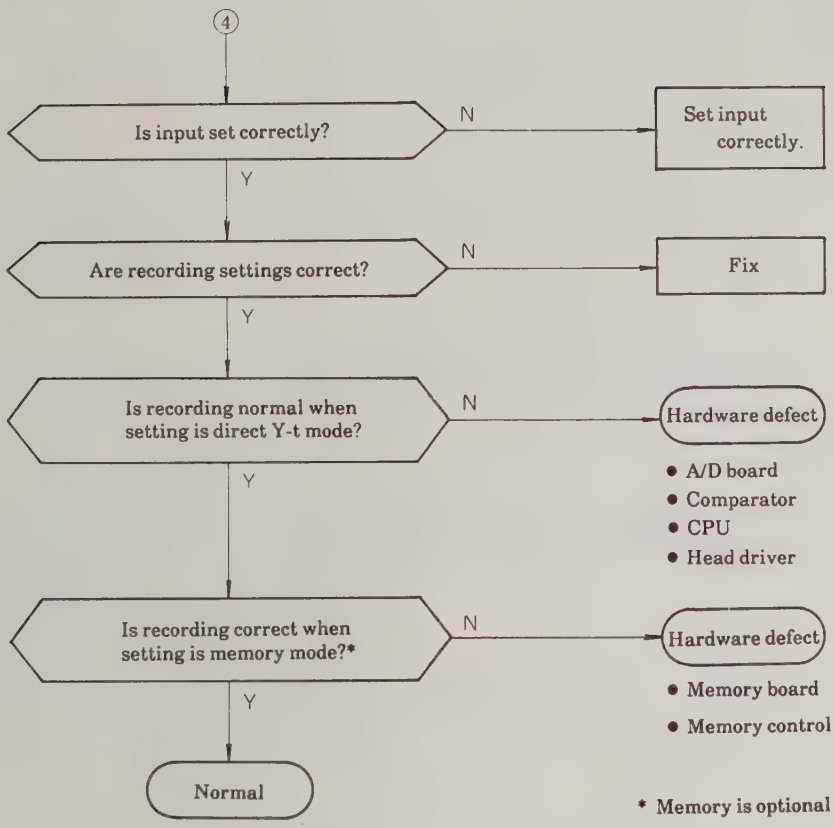

①
Is chart paper feed belt damaged?
N
Replace belt
Y
Can chart paper feed gear be turned manually?
N
Fix
Y
Remove belt and then try to turn it manually.
Normal

5

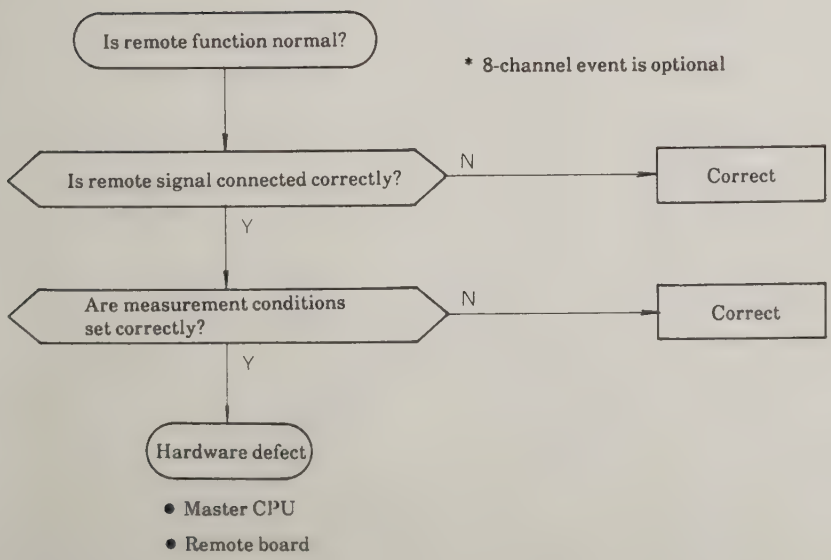

Recording condition is abnormal.
Does not record at all
Recording density is uneven.
Recording waveform is abnormal.
②
③
④


②
Is chart paper mounted correctly?
N
Fix
Y
Is head connector connected correctly?
N
Fix
Y
Is head set correctly?
N
Fix
Y
Are correct pulses output from TP3 and TP4 of head driver?
N
Hardware defect
• CPU board
• Head driver
Y
Are normal voltages output from TP100 and TP102 of slave CPU?
N
Hardware defect
• Power board
Y
Hardware defect
• Thermal head

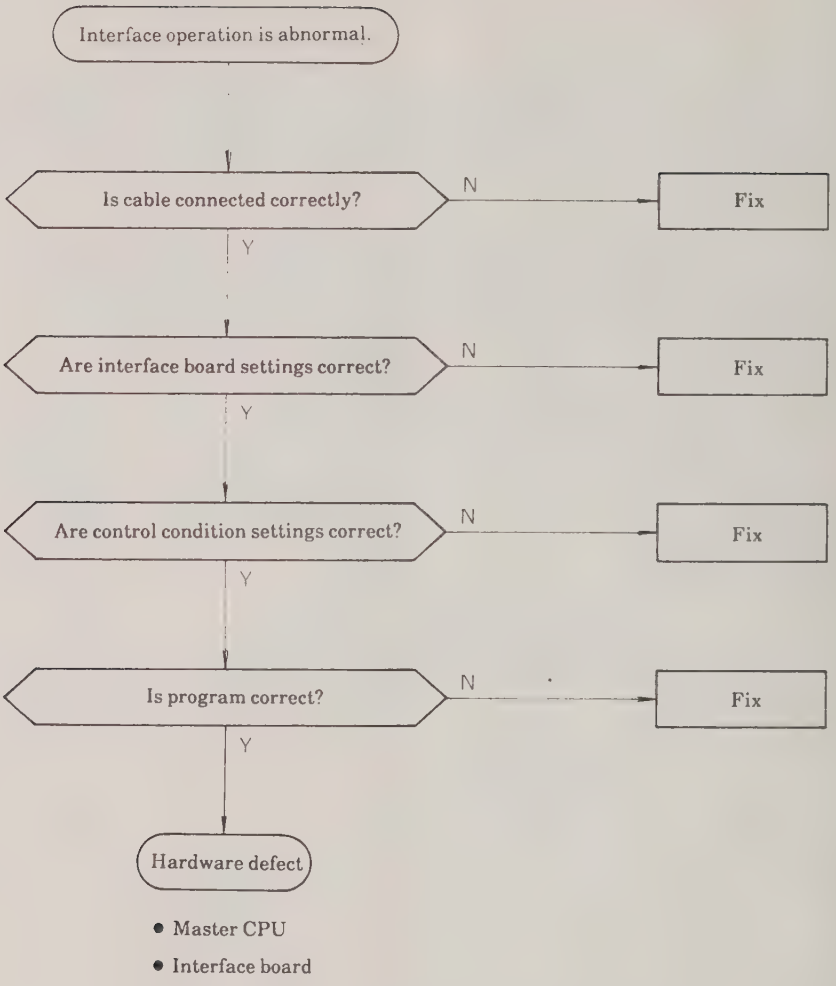

③
Is head set correctly?
N
Fix
Y
Are correct pulses output from TP3 and TP4 of head driver?
N
Hardware defect
• CPU board
• Head driver
Y
Are normal voltages output from TP100 and TP102 of slave CPU?
N
Hardware defect
• Power board
Y
Hardware defect
• Thermal head


④
Is input set correctly?
N
Set input correctly.
Y
Are recording settings correct?
N
Fix
Y
Is recording normal when setting is direct Y-t mode?
N
Hardware defect
• A/D board
• Comparator
• CPU
• Head driver
Y
Is recording correct when setting is memory mode?*
N
Hardware defect
• Memory board
• Memory control
Y
Normal
* Memory is optional

⑥

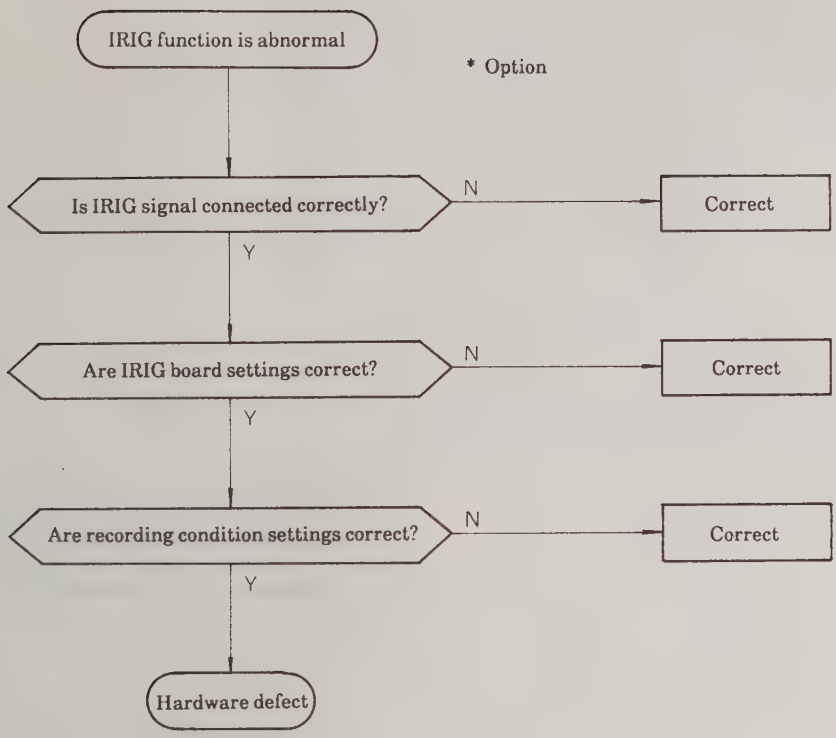

Is remote function normal?
* 8-channel event is optional
Is remote signal connected correctly?
N
Correct
Y
Are measurement conditions set correctly?
N
Correct
Y
Hardware defect
• Master CPU
• Remote board

7



- Master CPU
- Interface board

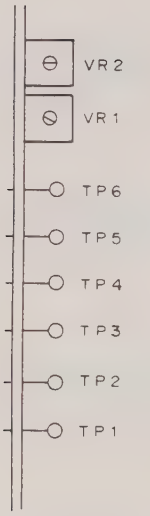
8



- Master CPU
- IRIG board

5. ADJUSTMENTS

5.1 Head Driver Board Adjustment

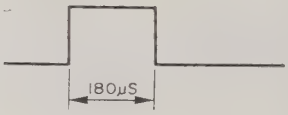


PR3600-03

Pulse width adjustment

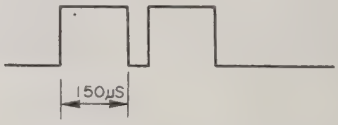
① Set the chart paper feed speed to 1 mm/s.

② Measure the waveform between TP2 (ground) and TP3.



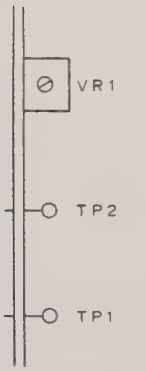
Adjust trimmer VR2 so that the waveform width is approximately 180 μs.

③ Measure the waveform between TP2 (ground) and TP4.



Adjust trimmer VR1 so that the waveform width is approximately 150 μs.

5.2 Memory Control Board Adjustment



PR3600-09

Pulse width adjustment

① Set recording to direct X-Y mode.

② Measure the waveform between TP1 (ground) and TP2.

Adjust trimmer VR1 so that the waveform width is approximately 500 ns.

5.3 Chart Driver Board Adjustment

Adjustment of the feed control circuit is performed after the feed motor (step motor) and head connectors have been removed.

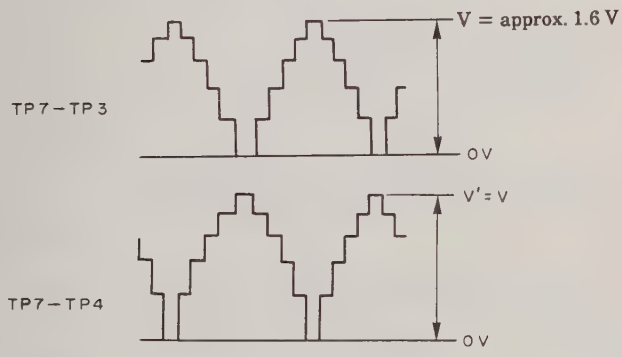
PR3600-04

Torque Balance Adjustment

① Set the chart paper feed speed to 5 mm/s.

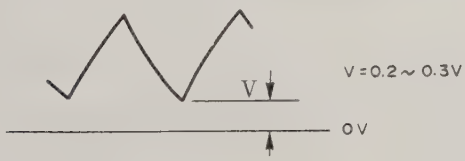
② Measure the voltage between TP7 (ground) and TP3.

③ Adjust trimmer VR3 so that the voltage between TP7 (ground) and TP4 is the same as that between TP7 and TP3.



Offset

① Adjust trimmer VR1 so that the minimum level of the waveform between TP7 (ground) and TP2 is between 0.2 and 0.3 V.



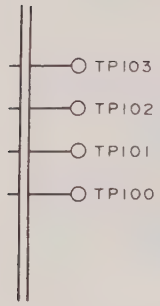
Mark Sensor Adjustment

① Measure the voltage between TP7 (ground) and TP1.
Mark sensor, V1
Other than mark sensor, V2

② Adjust trimmer VR4 so that the voltage V between TP7 (ground) and TP6 is given by the following equation.

$V = (V1 + V2)/2$

5.4 Head Voltage Adjustment



PR3600-102

TP100, VHD1, and TP101, GNDA,
Voltages of head on right viewed from WR3600 front panel

TP102, VHD2, and TP103, GNDB
Voltages of head on left viewed from WR3600 front panel

TP100 (+), and TP101 (−)
Adjust trimmer VR1 so that the voltage between these two is 22 V (with a head resistance of 700 Ω)

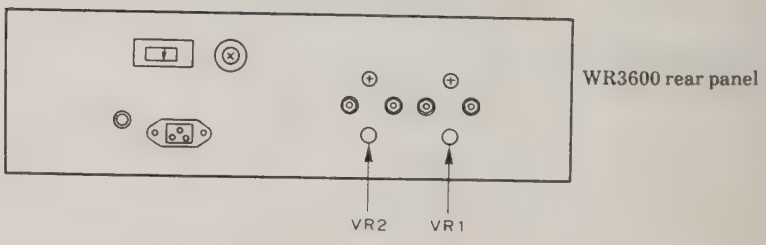
TP102 (+), and TP103 (−)
Adjust trimmer VR2 so that the voltage between these two is 22 V (with a head resistance of 700 Ω)

Adjust voltage V so that the relationship between head voltage V and head resistance R is given by the following equation.

$$V = 0.83\sqrt{R}$$

It is important to ensure that mistakes are not made when a digital voltmeter is connected to the (+) and (−) check terminals.

Positions of Trimmers VR1 and VR2



5.5 A/D Board Adjustment

- Adjustment should be performed after a heat run of at least 30 min.

  ① Turn power off, and pull out the A/D board from the WR3600.

  ② Mount the A/D extender board to the WR3600, and put the A/D board onto the A/D extender board.

  ③ Remove A/D board jumper pins J1 and J2.

  ④ Short the input (to BNC connectors).

  ⑤ Remove the connector attached to connector P2, and attach the shorting connector.

  ⑥ Turn the power on, and set the range to maximum sensitivity (±0.25 V at full scale). (Set DIP switches SW1 and SW2 to 4.)

- Preamplifier Section Offset Section Adjustment

  Two-channel configuration is used for one A/D board, and consequently adjustments for each channel should be made according to the following procedure.

  ⑦ Adjustment for section corresponding to A/D board for A/D board odd-numbered channels (located at the top when mounted to the WR3600).

  a) Measure the voltage V1 between TP8 (+side) and TP10 (−side) using the digital voltmeter.

  Adjust VR9 so that $-0.1\ \text{mV} < V_1 < +0.1\ \text{mV}$.

  b) Measure the voltage V2 between TP7 (+side) and TP10 (−side) using the digital voltmeter.

  Adjust VR7 so that $-0.1\ \text{mV} < V_2 < +0.1\ \text{mV}$.

  c) Measure the voltage V3 between TP6 (+side) and TP10 (−side) using the digital voltmeter.

  Adjust VR8 so that $-0.2\ \text{mV} < V_3 < +0.2\ \text{mV}$.

  ⑧ Adjustment for section corresponding to A/D board for A/D board even-numbered channels (located at the top when mounted to the WR3600).

  a) Measure the voltage V1 between TP5 (+side) and TP9 (−side) using the digital voltmeter.

  Adjust VR10 so that $-0.1\ \text{mV} < V_1 < +0.1\ \text{mV}$.

  b) Measure the voltage V2 between TP4 (+side) and TP9 (−side) using the digital voltmeter.

  Adjust VR4 so that $-0.1\ \text{mV} < V_2 < +0.1\ \text{mV}$.

c) Measure the voltage V3 between TP3 (+side) and TP9 (−side) using the digital voltmeter.

Adjust VR3 so that $-0.2\,mV < V_3 < +0.2\,mV$.

- A/D Converter Conversion Time Adjustment

⑨ Observe the waveform between pin 10 of IC 19 (+side) and TP10 (−side) on an oscilloscope, and adjust VR2 so that the conversion time t_1 becomes approximately 8.5 μs.

⑩ Observe the waveform between pin 10 of IC 18 (+side) and TP10 (−side) on an oscilloscope, and adjust VR1 so that the conversion time t_2 becomes approximately 8.5 μs.

⑪ Turn power off, and remove the A/D board together with the A/D extension board.

⑫ Mount the jumper pins J1 and J2 to the A/D board.

⑬ Remove the shorting connector attached to connector P2, and connect it to the original connector.

⑭ Install the A/D board into the WR3600, and turn the power on.

- Span Adjustment

⑮ Adjustment for section corresponding to A/D board for A/D board odd-numbered channels (located at the top when mounted to the WR3600).

a) Connect a voltage generator to the BNC input connector (upper connector).

b) Set the WR3600 to the logging mode (with the logging interval at 1 s).

c) Adjust VR5 so that when +0.2500 V is input from the voltage generator the logged value is $2475\times10-4$ to $2525\times10-4$.

d) Check that when −0.2500 V is input from the voltage generator the logged value is $-2475\times10-4$ to $-2525\times10-4$.

⑯ Adjustment for section corresponding to A/D board for A/D board even-numbered channels (located at the top when mounted to the WR3600).

a) Connect a voltage generator to the BNC input connector (lower connector).

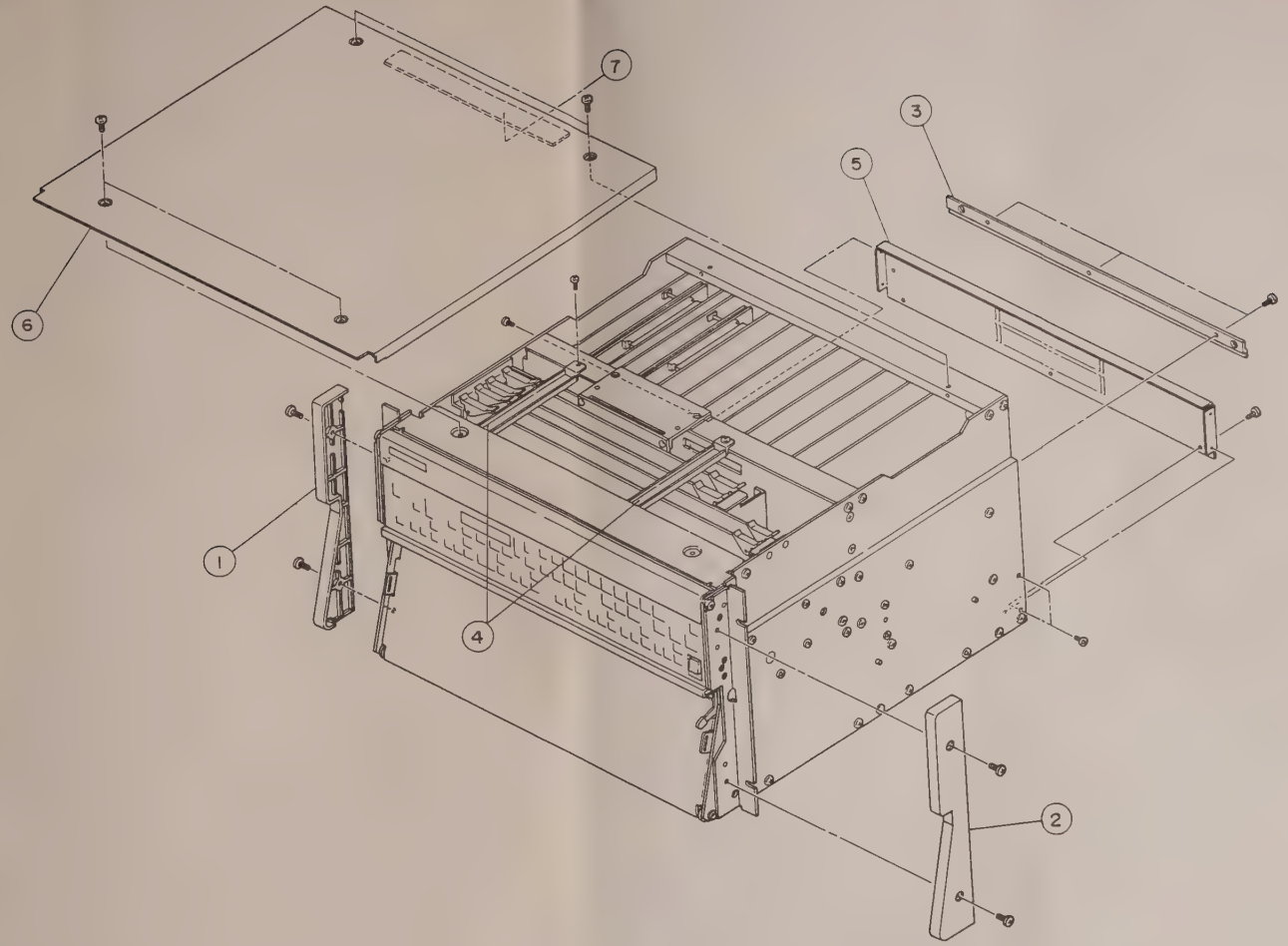
b) Set the WR3600 to the logging mode (with the logging interval at 1 s).

c) Adjust VR6 so that when +0.2500 V is input from the voltage generator the logged value is 2475×10^{-4} to 2525×10^{-4}.

d) Check that when −0.2500 V is input from the voltage generator the logging value is -2475×10^{-4} to -2525×10^{-4}.

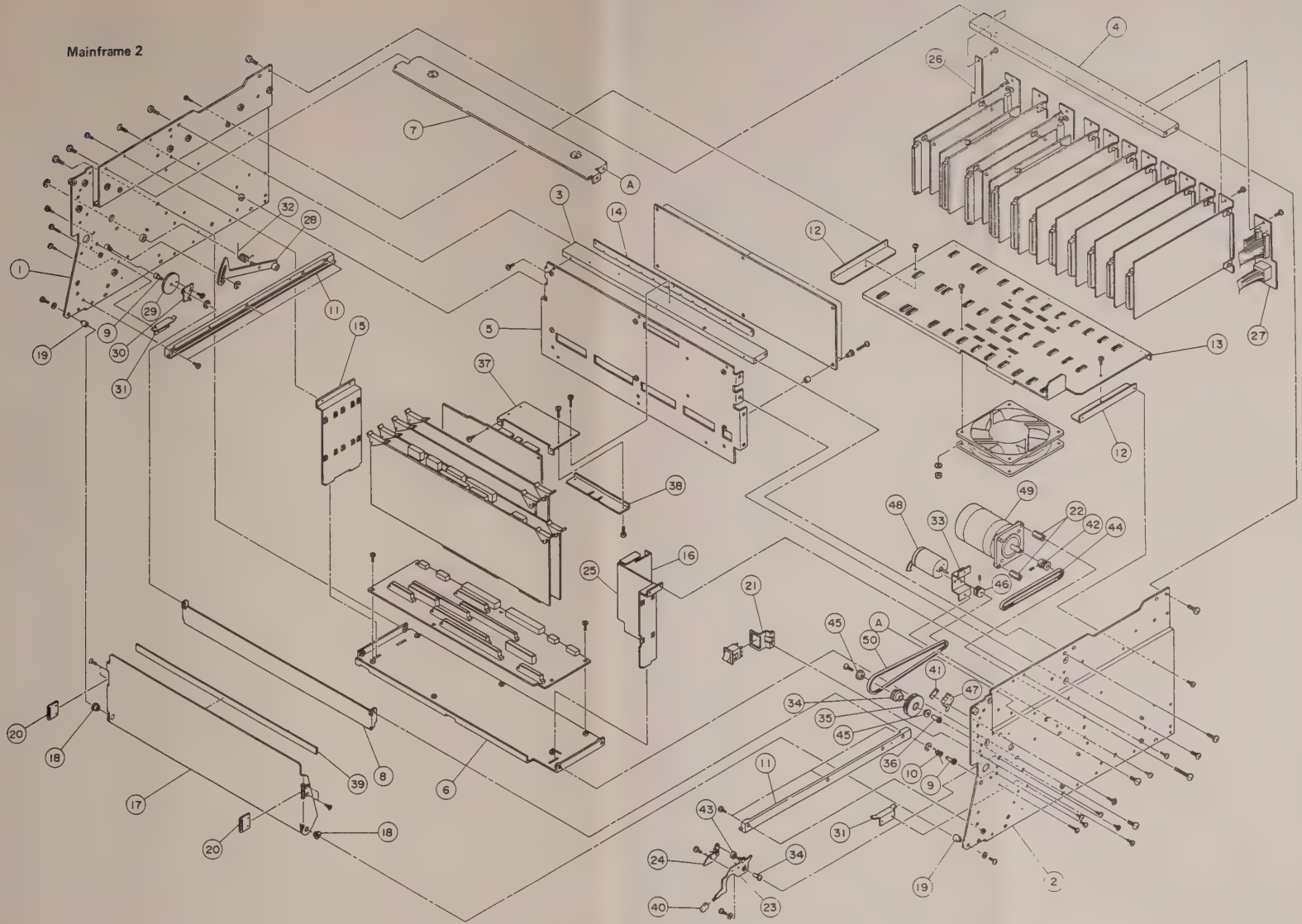
6. Disassembly and List of Mechanisms

Mainframe 1



Mainframe 1

Item	Part No.	Description	Q'ty	Remarks
1	036000730	Cover L	1	
2	036000740	Cover R	1	
3	036000770	Panel Cover	1	
4	036000780	Holder	2	
5	036005111	Rear Panel	1	
6	036005210	Cover, Upper	1	
7	036005220	Rubber	1	


Mainframe 2
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A

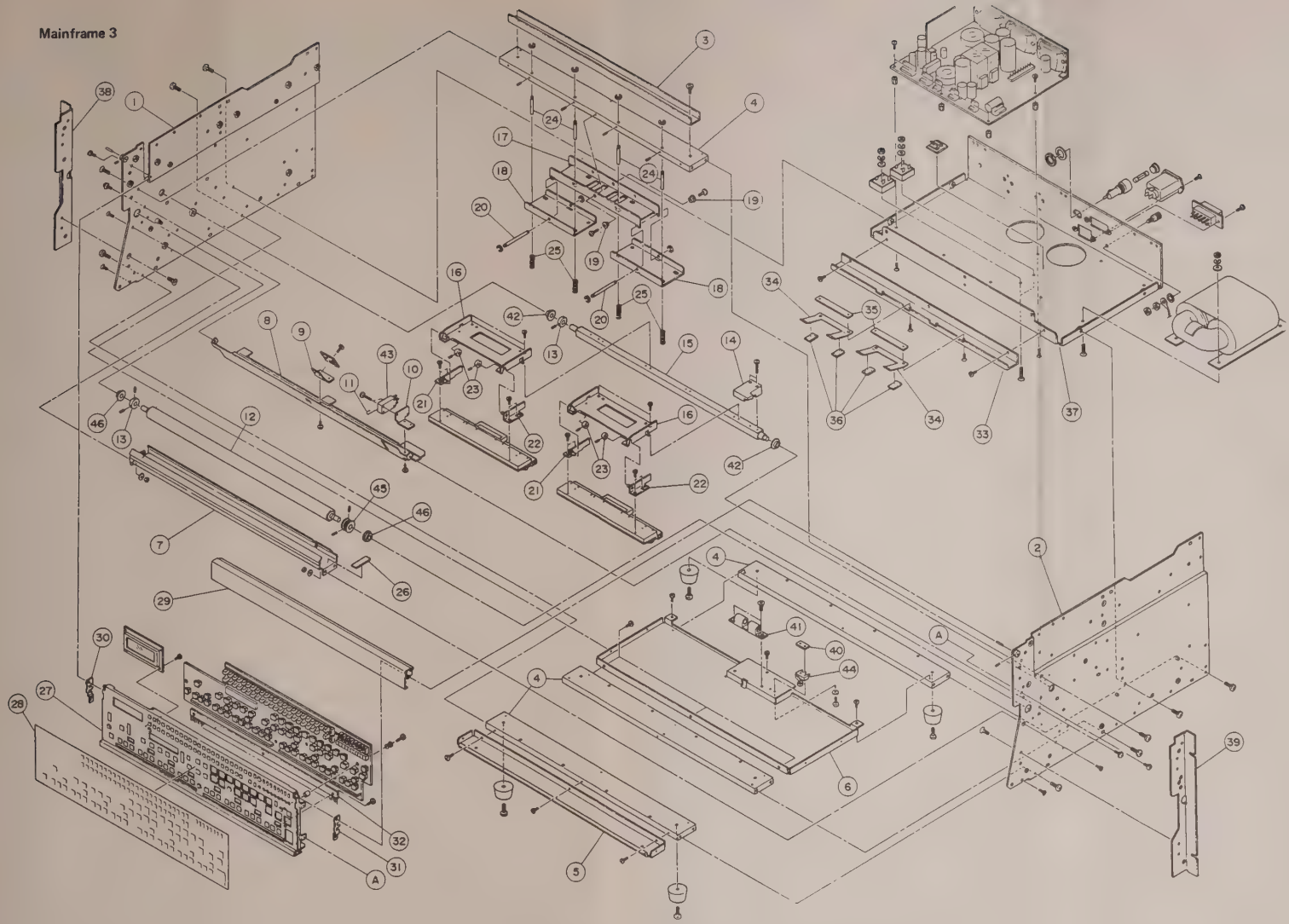
Mainframe 2 (1/2)

Item	Part No.		Description	Q'ty	Remarks
1	036000011		Plate-L	1	
2	036000081		Plate-R	1	
3	036000120		Stay-B	1	
4	036000130		Stay-C	1	
5	036000140		Plate	1	
6	036000150		Plate	1	
7	036000180		Stay, Upper	1	
8	036000230		Guide Panel	1	
9	036000240		Shaft, Guide Panel	2	
10	036000250		Spring, Guide Panel	1	
11	036000270		Guide Rail	2	
12	036000280		Support	2	
13	036000290		Cover, Power Box	1	
14	036000300		Guide Plate-A	1	
15	036000320		Guide Plate-L	1	
16	036000330		Guide Plate-R	1	
17	036000361		Writing Panel	1	
18	036000370		Bushing	2	
19	036000380		Shaft	2	
20	036000390		Grip	2	
21	036000401		Holder	1	
22	036000470		Motor Spacer	4	
23	036000480		Lever	1	
24	036000521		Roller Support	1	
25	036000690		Insulator	1	
26	036000750		Rear Panel-L	1	
27	036000760		Rear Panel-R	1	
28	036001210		Arm	1	
29	036001260		Gear	1	
30	036001270		Hook	1	
31	036001280		Holder	2	
32	036001290		Spring	1	
33	036001410		Holder, Motor	1	
34	036001420		Gear	1	
35	036001430		Pulley	1	
36	036001440		Shaft, Gear	1	
37	036007010		Heat Sink	1	
38	036007020		TR Holder	1	
39	031017590		Magnet Rubber	1	
40	067113180		Cap	1	
41	085002320		Plate Nut	1	
42	085002590		Pulley	1	
43	310804001		Bearing	1	
44	373600001		Belt	1	
45	310905200		Bearing	2	

Mainframe 2 (2/2)

Item	Part No.		Description	Q'ty	Remarks
46	731016210		Pulley	1	
47	508401010		Switch SS-5GL	1	
48	509100017		DC Motor	1	
49	503100030		Stepping Motor	1	
50	376610001		Belt	1	

Mainframe 3



Mainframe 3

Item	Part No.		Description	Q'ty	Remarks
1	036000011		Plate-L	1	
2	036000081		Plate-R	1	
3	036000100		Stay	1	
4	036000110		Stay-A	4	
5	036000190		Stay, Bottom	1	
6	036000200		Plate, Bottom	1	
7	036000210		Support	1	
8	036000220		Guide, Plate	1	
9	036000410		Support, PCB	1	
10	036000420		Support, Switch	1	
11	036000430		Actuator	1	
12	036000441		Platen	1	
13	036000450		Bushing	2	
14	036000530		Arm	1	
15	036000550		Shaft	1	
16	036000561		Arm	2	
17	036000570		Equalizer-1	1	
18	036000580		Equalizer-2	2	
19	036000590		Bushing	2	
20	036000600		Shaft	2	
21	036000610		Support-L, Head	2	
22	036000640		Support-R, Head	2	
23	036000660		Holder	4	
24	036000670		Shaft, Spring	4	
25	036000680		Spring	4	
26	036000790		Cushion	1	
27	036000801		Control Box	1	
28	036000880		Control Panel	1	
29	036000900		Cover, Front	1	
30	036000950		Guide-L	1	
31	036000960		Guide-R	1	
32	036000990		Brush	1	
33	036001450		Guide	1	
34	036001460		Spring	2	
35	036001470		Plate Nut	2	
36	036001480		Friction	4	
37	036001510		Power Box	1	
38	036005230		Stay-L	1	
39	036005240		Stay-R	1	
40	085002320		Plate Nut	1	
41	307500012		Catch	1	
42	321208010		Bearing	2	
43	508401017		Switch CC-5-L	1	
44	508408031		Switch SS-5GL2-F	1	
45	036000460		Pulley, Platen	1	
46	311408003		Bearing	2	

Mainframe 3

Item	Part No.		Description	Q'ty	Remarks
1	036000011		Plate-L	1	
2	036000081		Plate-R	1	
3	036000100		Stay	1	
4	036000110		Stay-A	4	
5	036000190		Stay, Bottom	1	
6	036000200		Plate, Bottom	1	
7	036000210		Support	1	
8	036000220		Guide, Plate	1	
9	036000410		Support, PCB	1	
10	036000420		Support, Switch	1	
11	036000430		Actuator	1	
12	036000441		Platen	1	
13	036000450		Bushing	2	
14	036000530		Arm	1	
15	036000550		Shaft	1	
16	036000561		Arm	2	
17	036000570		Equalizer-1	1	
18	036000580		Equalizer-2	2	
19	036000590		Bushing	2	
20	036000600		Shaft	2	
21	036000610		Support-L, Head	2	
22	036000640		Support-R, Head	2	
23	036000660		Holder	4	
24	036000670		Shaft, Spring	4	
25	036000680		Spring	4	
26	036000790		Cushion	1	
27	036000801		Control Box	1	
28	036000880		Control Panel	1	
29	036000900		Cover, Front	1	
30	036000950		Guide-L	1	
31	036000960		Guide-R	1	
32	036000990		Brush	1	
33	036001450		Guide	1	
34	036001460		Spring	2	
35	036001470		Plate Nut	2	
36	036001480		Friction	4	
37	036001510		Power Box	1	
38	036005230		Stay-L	1	
39	036005240		Stay-R	1	
40	085002320		Plate Nut	1	
41	307500012		Catch	1	
42	321208010		Bearing	2	
43	508401017		Switch CC-5-L	1	
44	508408031		Switch SS-5GL2-F	1	
45	036000460		Pulley, Platen	1	
46	311408003		Bearing	2	

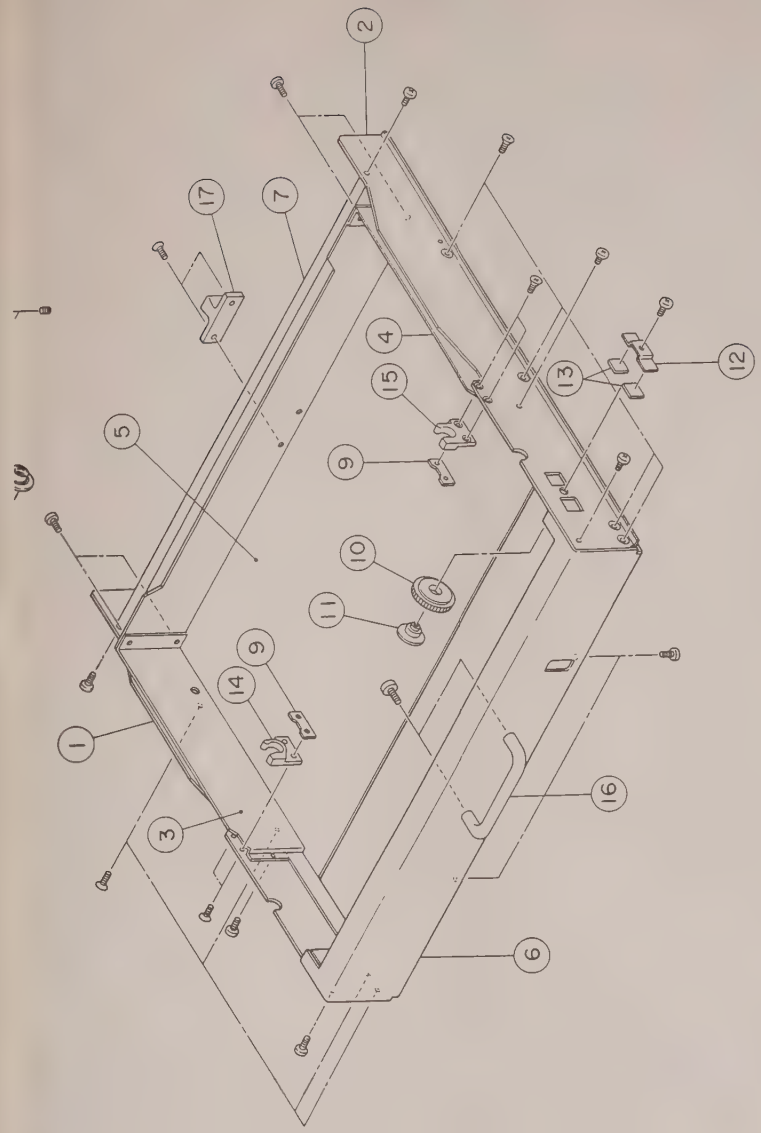


Chart Stocker

Item	Part No.		Description	Q'ty	Remarks
1	036001010		Side Plate L	1	
2	036001020		Side Plate R	1	
3	036001030		Plate L	1	
4	038001040		Plate R	1	
5	036001050		Bottom Plate	1	
6	036001060		Front Panel	1	
7	036001090		Support	1	
8	036001110		Guide Shaft	1	
9	036001140		Plate Nut	2	
10	036001160		Gear	1	
11	036001170		Shaft, Gear	1	
12	036001180		Spring	1	
13	036001190		Friction	2	
14	075002200		Holder L	1	
15	075002210		Holder R	1	
16	307600001		Handle	1	
17	307500012		Catch	1	
18	036001310		Shaft, Stock Bobbin	1	Option
19	036001330		Frange L	1	
20	731014804		Frange R	1	
21	031014841		Bobbin L	1	

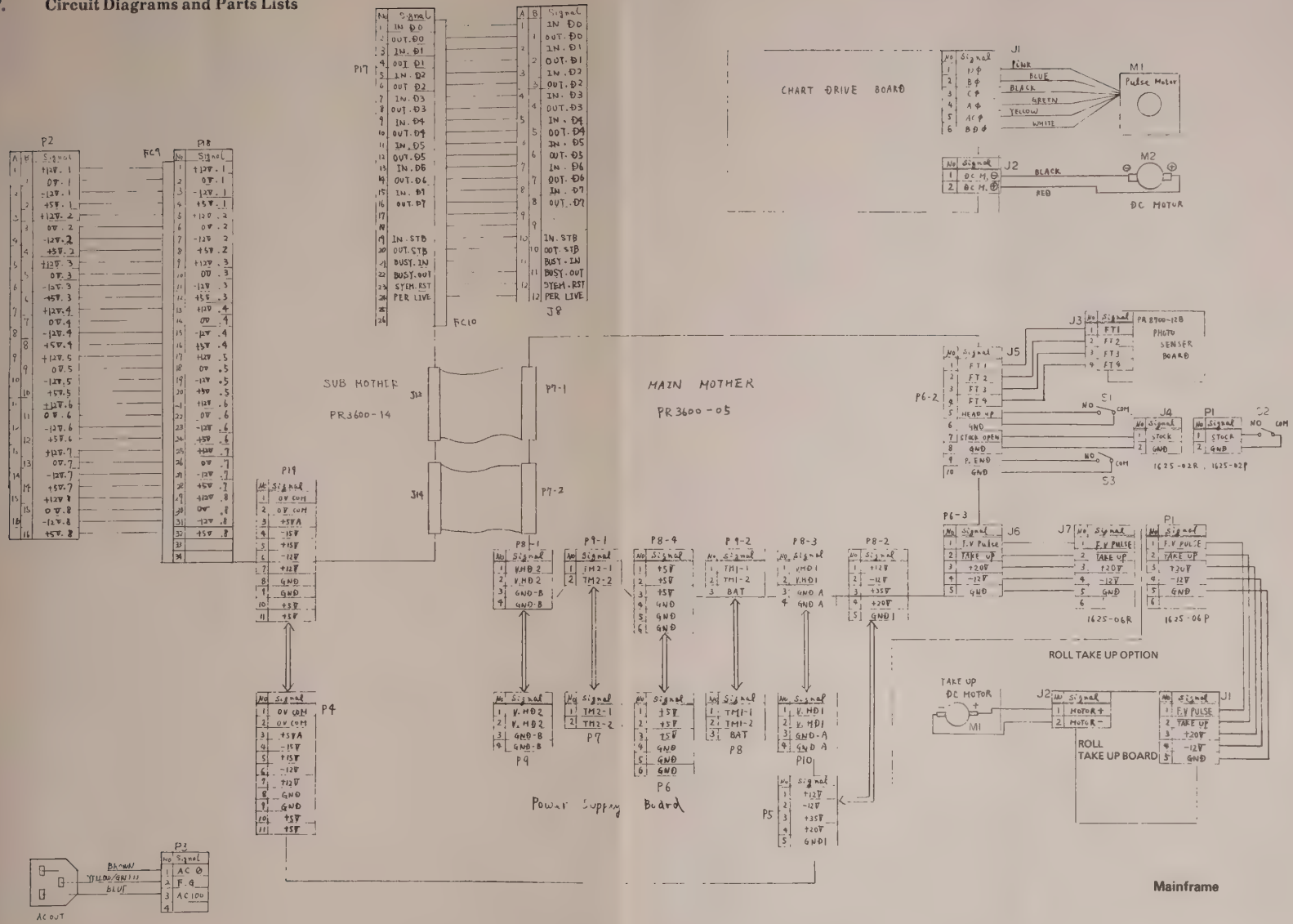


CHART DRIVE BOARD
J1
M1
Pulse Motor
PINK
BLUE
BLACK
GREEN
YELLOW
WHITE
J2
M2
BLACK
RED
DC MOTOR
SUB MOTHER
PR3600-14
MAIN MOTHER
PR3600-05
J33
J34
P7-1
P7-2
P17
P18
P19
P2
J8
FC9
FC10
J3
J5
PR 8700-12B
PHOTO SENSER BOARD
P6-2
S1
S3
J4
P1
S2
1625-02R, 1625-02P
P6-3
J6
J7
1625-06R
1625-06P
ROLL TAKE UP OPTION
TAKE UP DC MOTOR
M1
J2
J1
ROLL TAKE UP BOARD
P8-1
P9-1
P8-4
P9-2
P8-3
P8-2
P4
P9
P7
P6
P8
P10
P5
Power Supply Board
P3
BROWN
YELLOW/GREEN
BLUE
AC OUT
Mainframe

Mainframe (1/1)

Figure	Part No.	Description		Type	Remarks
J1	513400036	Connector, Receptacle	6 pin	HNC2-2.5S-6	
J2	513400043	Connector, "	2 pin	HNC2-2.5S-2	
J3	513400076	Connector, "	4 pin	HNC2-2.5S-4	
J4	513200203	Connector, "	2 pin	1625-2R-1	
J5	513400072	Connector, "	10 pin	HNC-2.5S-10	
J6	513400044	Connector, "	5 pin	HNC2-2.5S-5	
J7	513200602	Connector, "	6 pin	1625-06R	
J8	520110073	Connector, "	24 pin	FCN361J024-AG	
M1	509100030	Pulse Motor		PH268-21	
M2	509100017	DC Motor, Coreless	24V DC	LN30-N21N1	
S1	508401010	Switch, Micro		SS-5GL	
S2	508408031	Switch, "		SS-5GL2-F	
S3	508401017	Switch, "		CC-5-L	
FC4	521000296	Flat Cable	16 pin	9500-04 (16P)	
FC5	521000297	"	40 pin	9500-05 (40P)	
FC9	521000301	"	34 pin	9500-09 (34P)	
FC10	521000302	"	26 pin	9500-10 (26P)	
P1	513200202	Connector, Plug	2 pin	1025-2P-1	
P2	513400149	Connector, Pin Header	32 pin	FCN361P032-AG	
P3	513200403	Connector, Plug	4 pin	1625-04P	
	513308942	Socket Outlet		AC-G10BB44	
	513400037	Contact Pin		HNC2-2.5S-A	For J1 ~ 3
	513400002	"		1855TL	For J4
	513400037	"		HNC2-2.5S-A	For J5, 6
	513400002	"		1855TL	For J7
	520110081			FCN360-A4	For J8
	513400001	Contact Pin		1854TL	For P1
	520110081			FCN360-A4	For P2
	513400021	Contact Pin		1560TL	For P3
	597110011	Thermal Head		KF2007-11	

Keyboard (1/7)

P1			
Signal	No		Signal
A RL 0	1	2	A RL 1
A RL 2	3	4	A RL 3
A RL 4	5	6	A RL 5
A RL 6	7	8	A RL 7
A SHIFT	9	10	A SL 0
A SL 1	11	12	A SL 2
B RL 0	13	14	B RL 1
B RL 2	15	16	B RL 3
B RL 4	17	18	B RL 5
B RL 6	19	20	B RL 7
B SL 0	21	22	B SL 1
B SL 2	23	24	B SL 3
B BD	25	26	B OUT A0
B OUT A1	27	28	B OUT A2
B OUT A3	29	30	B OUT B0
B OUT B1	31	32	B OUT B2
B OUT B3	33	34	B TRIG
+5V	35	36	GND
+5V	37	38	GND
+5V	39	40	GND

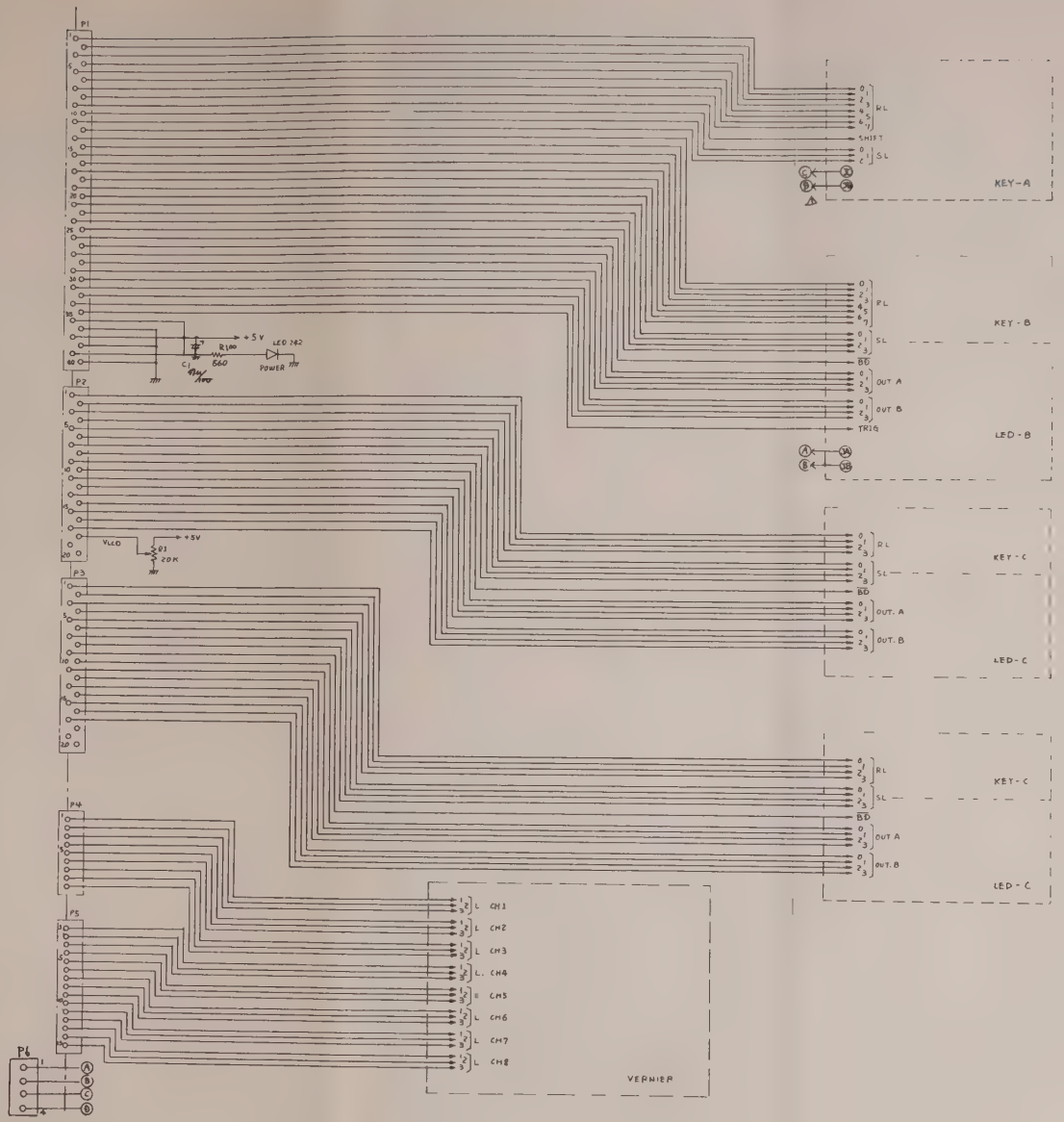
P2			
Signal	No		Signal
C RL 0	1	2	C RL 1
C RL 2	3	4	C RL 3
C SL 0	5	6	C SL 1
C SL 2	7	8	C SL 3
C BD	9	10	C OUT A0
C OUT A1	11	12	C OUT A2
C OUT A3	13	14	C OUT B0
C OUT B1	15	16	C OUT B2
C OUT B3	17	18	VLED
	19	20	

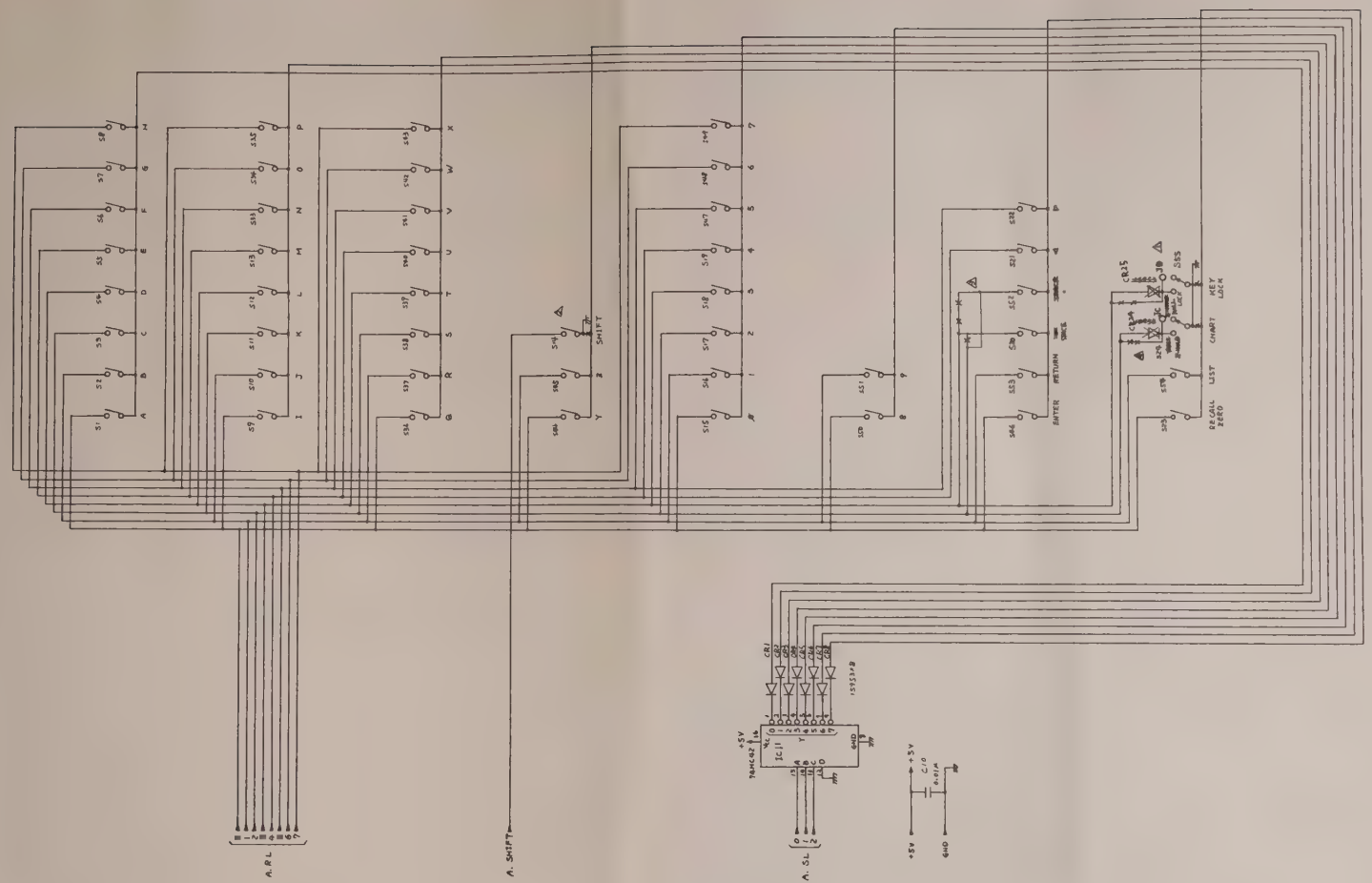
P3			
Signal	No		Signal
S C RL 0	1	2	S C RL 1
S.C. RL 2	3	4	S.C. RL 3
S.C. SL 0	5	6	S.C. SL 1
S.C. SL 2	7	8	S.C. SL 3
S.C BD	9	10	S C OUT A0
S C OUT A1	11	12	S C OUT A2
S C OUT A3	13	14	S C OUT B0
S C OUT B1	15	16	S C OUT B2
S C OUT B3	17	18	
	19	20	

P5	
No	Signal
1	CH4 L1
2	CH4 L2
3	CH4 L3
4	CH5 L1
5	CH5 L2
6	CH5 L3
7	CH6 L1
8	CH6 L2
9	CH6 L3
10	CH7 L1
11	CH7 L2
12	CH7 L3
13	CH8 L1
14	CH8 L2
15	CH8 L3

P4	
No	Signal
1	CH1 L1
2	CH1 L2
3	CH1 L3
4	CH2 L1
5	CH2 L2
6	CH2 L3
7	CH3 L1
8	CH3 L2
9	CH3 L3

P6	
No	Signal
1	EVENT L
2	EVENT R
3	CHRT ROLL
4	KEY LOCK




A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
SHIFT
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7
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+
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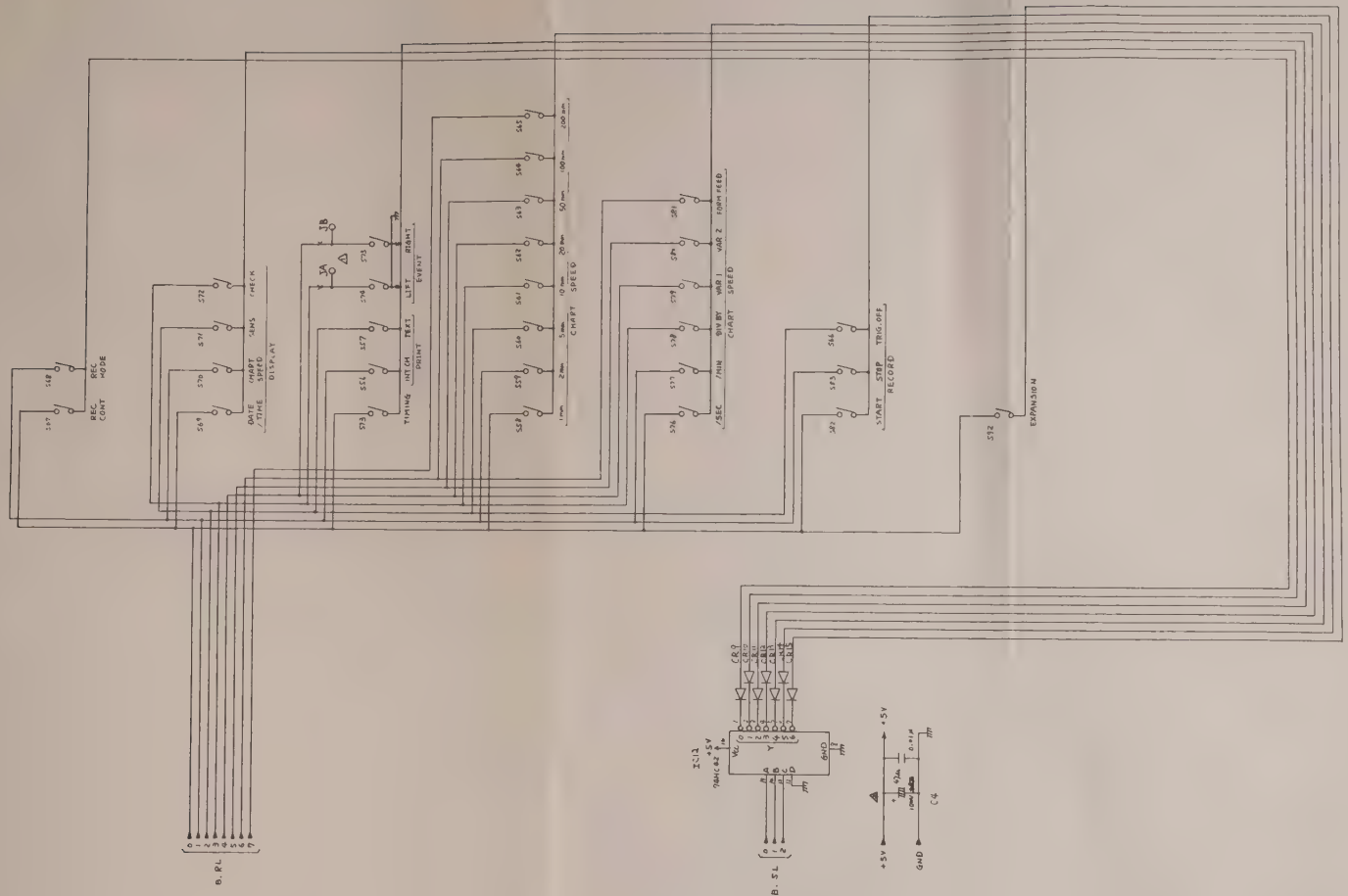
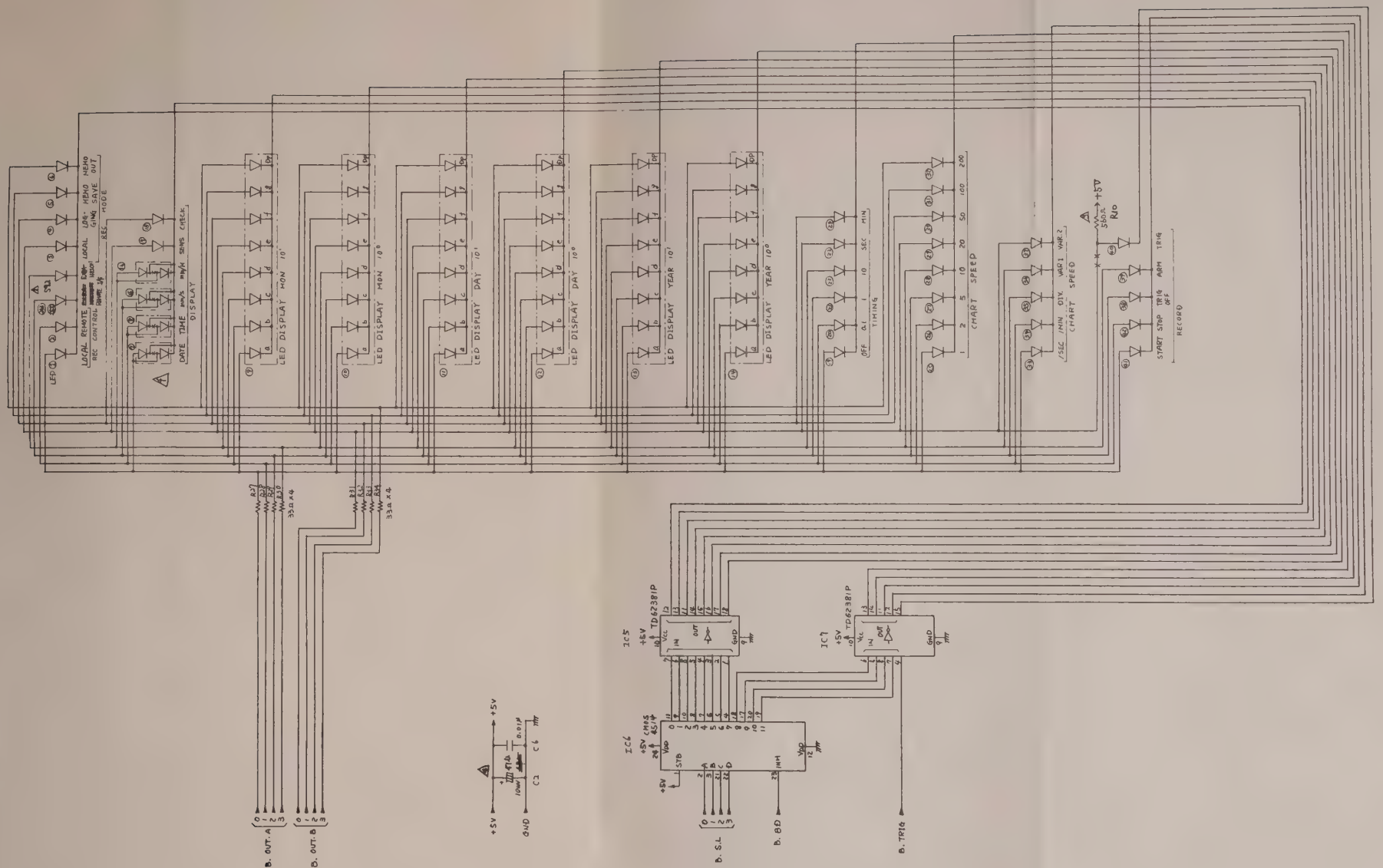
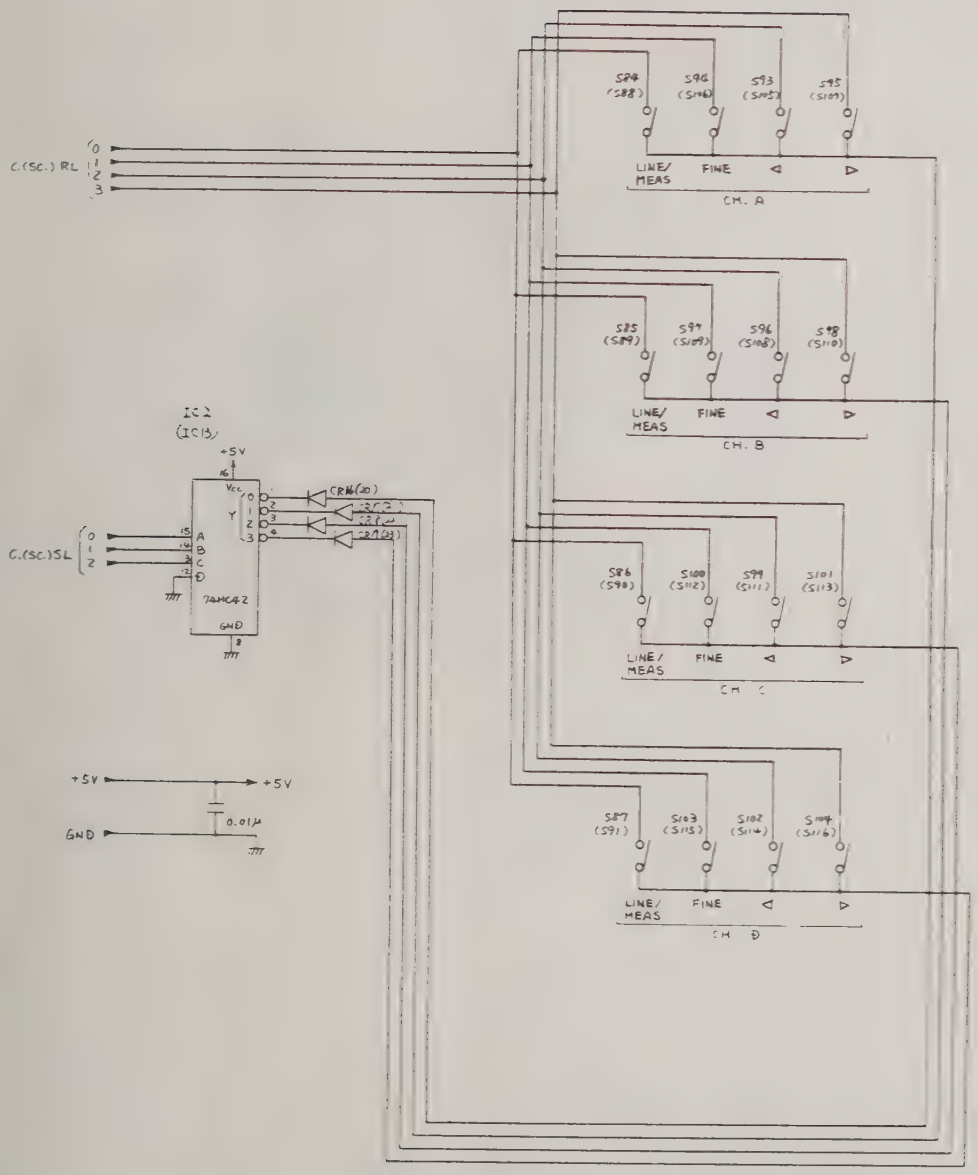
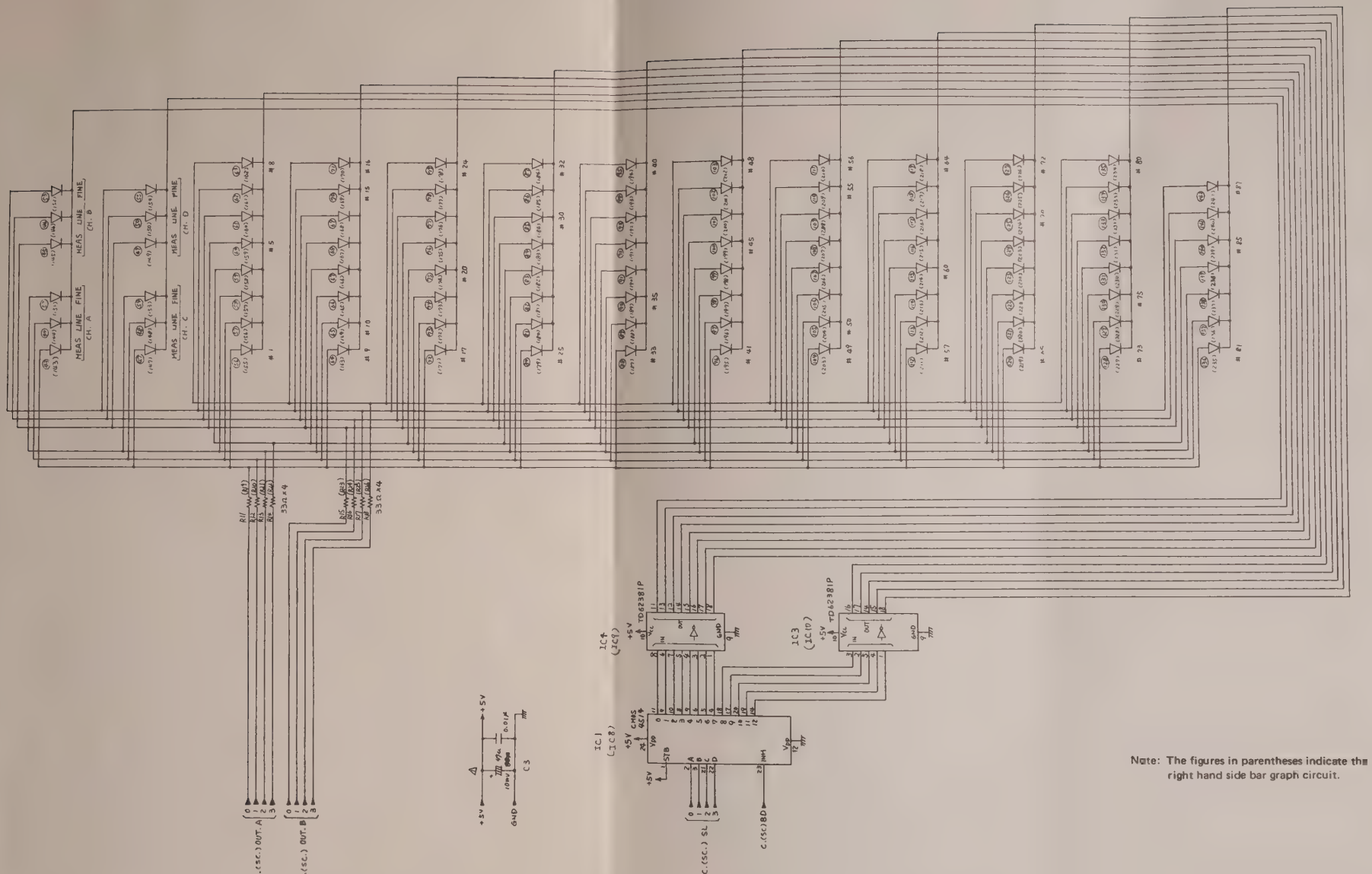
(
)
$
,
;
:
?
ENTER
RETURN
BREAK
CLR
HOME
INS
DEL
LIST
CHART
KEY
LOCK
CR1
CR2
CR3
CR4
CR5
CR6
CR7
CR8
IC11
TMM242
+5V
GND
A. RL
A. SHIFT
A. SL


REC CONT
REC MODE
DATE TIME
CHART SPEED
DISPLAY
TIMING
MARK
PRINT
LEFT
EVENT
RIGHT
EVENT
CHART SPEED
CHART SPEED
VAR 1
VAR 2
NORM FEED
START
STOP
RECORD
TRIG OFF
EXPANSION
B. PL
B. SL
+5V
GND
74HC42
74HC04
0.01μ
C4

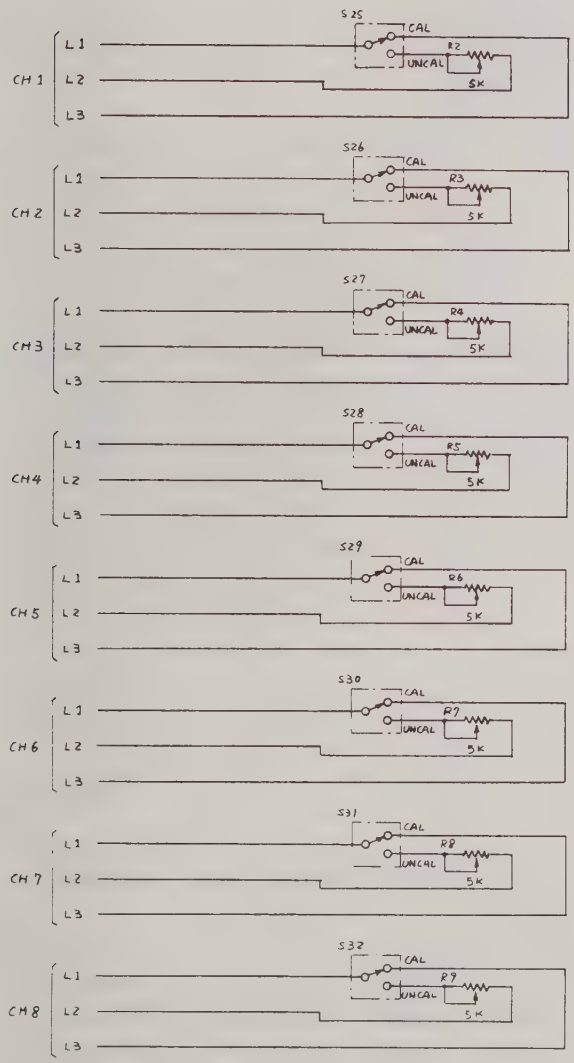

LED DISPLAY MON 10¹
LED DISPLAY MON 10⁰
LED DISPLAY DAY 10¹
LED DISPLAY DAY 10⁰
LED DISPLAY YEAR 10¹
LED DISPLAY YEAR 10⁰
CHART SPEED
TIMING
B. OUT-A
B. OUT-B
B. S.L
B. BD
B. TRIG
IC5
IC4
IC1
TD62381P
+5V
GND

Keyboard (5/7)

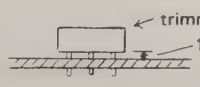

C.(SC.) RL
0
1
2
3
S94 (S88)
S96 (S90)
S93 (S85)
S95 (S107)
LINE/ MEAS
FINE
CH. A
S85 (S89)
S97 (S109)
S96 (S108)
S98 (S110)
CH. B
S86 (S98)
S100 (S112)
S99 (S111)
S101 (S113)
CH. C
S87 (S91)
S103 (S115)
S102 (S114)
S104 (S116)
CH. D
IC2
(IC13)
+5V
Vcc
16
Y
A
B
C
D
15
14
13
12
C.(SC.)SL
74HC42
GND
8
(CR16/20)
+5V
+5V
GND
0.01μ



Note: The figures in parentheses indicate the right hand side bar graph circuit.



* Solder the trimmers R1 to R9 1.5 mm above the board



Keyboard (1/3)

Figure	Part No.	Description	Type	Remarks
IC1	503303959	IC, CMOS 4-To-16 Line Decoder	TC4514BP	
IC2	503303803	IC, CMOS BCD To Decimal Decoder	TC74HC42P	
IC3	503304041	IC, Transistor Array	TD62381P	
IC4	"	IC, "	"	
IC5	"	IC, "	"	
IC6	503303959	IC, CMOS 4-To-16 Line Decoder	TC4514BP	
IC7	503304041	IC, Transistor Array	TD62381P	
IC8	503303959	IC, CMOS 4-To-16 Line Decoder	TC4514BP	
IC9	503304041	IC, Transistor Array	TD62381P	
IC10	"	IC, "	"	
IC11	503303803	IC, CMOS BCD To Decimal Decoder	TC74HC42P	
IC12	"	IC, "	"	
IC13	"	IC, "	"	
CR1~23	503100020	Di, Si V_R = 30V I_F = 100mA	1S953	
LED1~6	503100126	LED, Rectangular Lamp Orange I_F = 20mA	SLB-27DU3F	
LED7, 8	503100129	LED, Cube Type Green	TLG251	
LED9~14	512100052	LED, 7-Segment + Point	GL8P030	
LED15,16	503100129	LED, Cube Type Green	TLG251	
LED19~39	503100126	LED, Rectangular Lamp Orange I_F = 20mA	SLB-27DU3F	
LED40	503100127	LED, " Red "	SLB-27VR3F	
LED41~50	503100126	LED, " Orange "	SLB-27DU3F	
LED56~142	503100128	LED, " Red "	TLR211	
LED143~150	503100126	LED, " Orange "	SLB-27DU3F	
LED156~241	503100128	LED, " Red "	TLR211	
LED242	503100125	LED, " Green "	SLB-27MG3F	
LED243	503100126	LED, " Orange "	SLB-27DU3F	
R1	505102027	R, Trimmer Cermet 20K	GF06P-20K	
R2~9	505103026	R, " 5K	GF06P-5K	
R10	501810256	R, Metal Film 560 1/4W ±1%	RN1/4-560F	
R11~34	501810133	R, " 33 " "	RN1/4-33F	
R100	501810256	R, " 560 " "	RN1/4-560F	
C1~4	502103180	C, Electrolytic 47 F 10WV	ECEA1AKS470	
C5~10	502403007	C, Ceramic 0.01 F 50WV	ROU06F103Z-L45AC	
P1	521000293	Flat Cable 40 pin	9500-01	
P2, 3	521000294	" 20 pin	9500-02	

Keyboard (2/3)

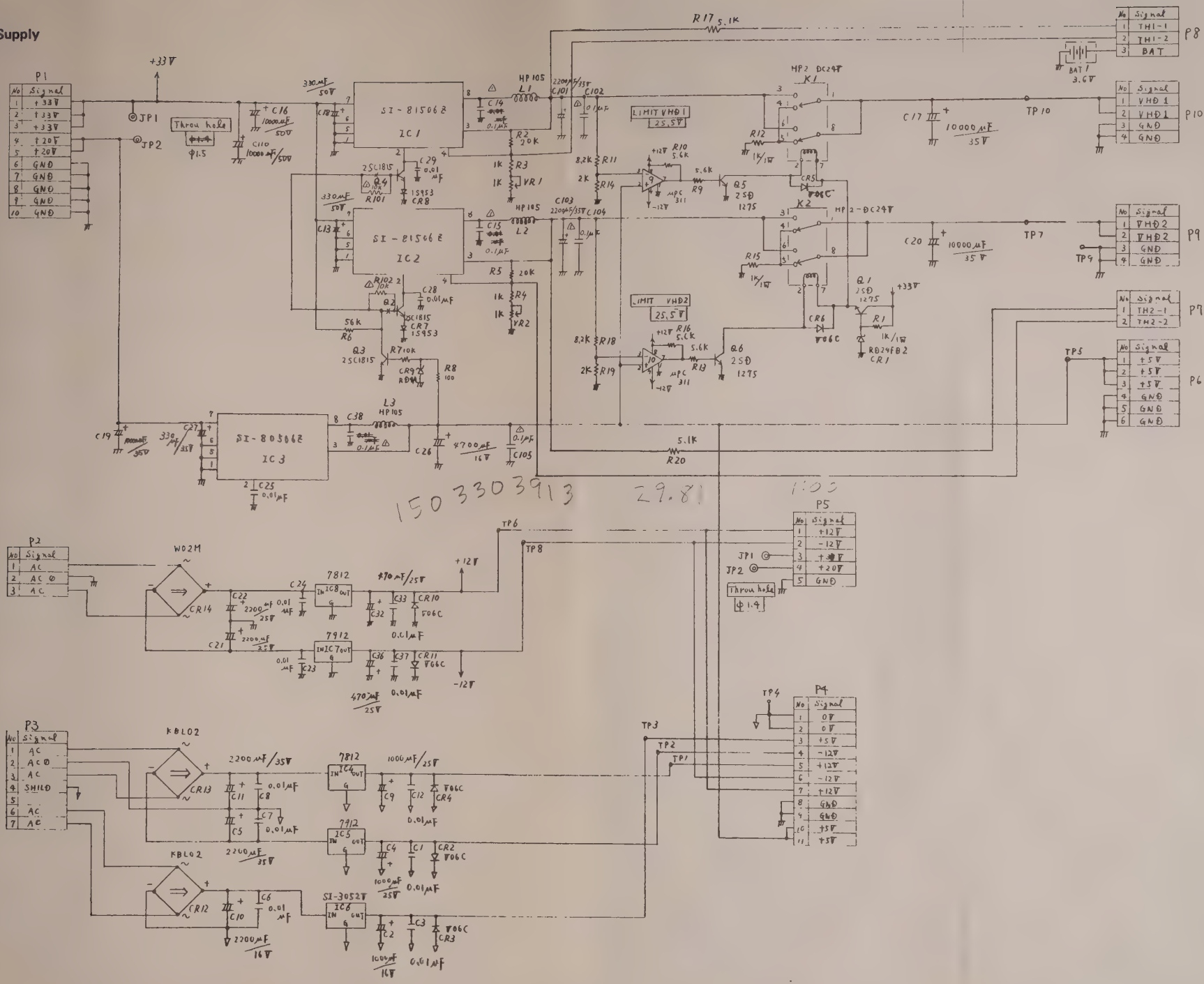
Figure	Part No.	Description	Type	Remarks
P4	513500473	Connector, Pin Header 9 pin	B9B-HX-A	
P5	513500477	" , " 15 pin	B15B-HX-A	
	513200403	" , Receptacle 6 pin	1625-04P	
	513400001	Contact Pin	1854TL	
S1 ~ 13	508102324	Switch, Push	B3F-1050	
S24 ~ 32	508102322	Switch, Slide	ESD-14314	
S33 ~ 54	508102324	Switch, Push	B3F-1050	
S55	508102322	Switch, Slide	ESD-14314	
S56 ~ 70	508102329	Switch, Push	TM1-01	
S71, 72	508102330	Switch & LED, Push	TM2-01-L8	
S73 ~ 91	508102329	Switch, Push	TM1-01	
S92	508102330	Switch & LED, Push	TM2-01-L8	
S93	508102329	Switch, Push	TM1-01	
S94	508102330	Switch & LED, Push	TM2-01-L8	
S95, 96	508102329	Switch, Push	TM1-01	
S97	508102330	Switch & LED, Push	TM2-01-L8	
S98, 99	508102329	Switch, Push	TM1-01	
S100	508102330	Switch & LED, Push	TM2-01-L8	
S101,102	508102329	Switch, Push	TM1-01	
S103	508102330	Switch & LED, Push	TM2-01-L8	
S104,105	508102329	Switch, Push	TM1-01	
S106	508102330	Switch & LED, Push	TM2-01-L8	
S107,108	508102329	Switch, Push	TM1-01	
S109	508102330	Switch & LED, Push	TM2-01-L8	
S110,111	508102329	Switch, Push	TM1-01	
S112	508102330	Switch & LED, Push	TM2-01-L8	
S113,114	508102329	Switch, Push	TM1-01	
S115	508102330	Switch & LED, Push	TM2-01-L8	
S116	508102329	Switch, Push	TM1-01	
S1 ~13	508102325	Cap, Light Gray	B32-1000	
S14	508102323	Cap, Blue	B32-1040	
S15 ~ 23	508102325	Cap, Light Gray	B32-1000	
S33 ~ 45	"	Cap, "		
S46	508102326	Cap, Orange	B32-1020	
S47 ~ 54	508102325	Cap, Light Gray	B32-1000	
S56, 57	508102332	Cap, Gray	TZ0004	
S58 ~ 69	508102327	Cap, Ivory	TZ0212	
S66 ~ 70	508102332	Cap, Gray	TZ0004	
S71, 72	508102331	Cap, "	TZ0104	
S73 ~ 75	508102332	Cap, "	TZ0004	
S76 ~ 80	508102327	Cap, Ivory	TZ0212	
S81	508102328	Cap, Gray	TZ0204	
S82, 83	508102327	Cap, Ivory	TZ0212	

Keyboard (3/3)

Figure	Part No.	Description	Type	Remarks
S84~91	508102332	Cap, Gray	TZ0004	
S92	508102331	Cap, "	TZ0104	
S93	508102332	Cap, "	TZ0004	
S94	508102331	Cap, "	TZ0104	
S95, 96	508102332	Cap, "	TZ0004	
S97	508102331	Cap, "	TZ0104	
S98, 99	508102332	Cap, "	TZ0004	
S100	508102331	Cap, "	TZ0104	
S101,102	508102332	Cap, "	TZ0004	
S103	508102331	Cap, "	TZ0104	
S104,105	508102332	Cap, "	TZ0004	
S106	508102331	Cap, "	TZ0104	
S107,108	508102332	Cap, "	TZ0004	
S109	508102331	Cap, "	TZ0104	
S110,111	508102332	Cap, "	TZ0004	
S112	508102331	Cap, "	TZ0104	
S113,114	508102332	Cap, "	TZ0004	
S115	508102331	Cap, "	TZ0104	
S116	508102332	Cap, "	TZ0004	
P.C.B.	213600010	Printed Circuit Board	3600-01A	

Keyboard Panel (1/1)

Figure	Part No.	Description	Type	Remarks
S1	508102333	Power Switch 10A	T-882SBDD	
	597110007	Liquid Crystal Display	LM16255,	
	513500479	Connector, Pin Header 14 pin	FCN724P014-AU/S	
	521000295	Flat Cable 14 pin	9500-03 (14P)	
	513500468	Connector, Receptacle	XHP-9	
	513500478	" , "	XHP-15	
	513400210	Contact Pin	SXH-001T-0.6	
	513500467	Connector, Receptacle	XHP-8	


P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
SI-81506B
SI-80306B
SI-3052T
7812
7912
W02M
KBL02
LIMIT VHD1
LIMIT VHD2
HP2 DC24T
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
BAT 1
3.6V
Throw hole
+33V
+12V
-12V
+5V
5.1K
R17 5.1K
R20 5.1K
150330391 29.81 1:05

PCB Power Supply (1/3)

Figure	Part No.	Description	Type	Remarks
IC1	503303921	IC, Voltage Regulator	SI-81506Z	
IC2	"	IC, "	SI-81506Z	
IC3	503303913	IC, "	SI-80506Z	
IC4	503303436	IC, "	AN7812F	
IC5	503303423	IC, "	AN7912F	
IC6	503301177	IC, "	SI-3052V	
IC7	503303423	IC, "	AN7912F	
IC8	503303436	IC, "	AN7812F	
IC9, 10	503301008	IC, Op-Amp	μPC311C	
CR1	503103036	Di, Zener 24V 1W ±5%	RD24FB2	
CR2 ~ 6	503100021	Di, Si V_R = 200V I_F = 1.1A	V06C	
CR7, 8	503100020	Di, " V_R = 30V I_F = 100mA	1S953	
CR9	503100068	Di, Zener	RD4A	
CR10, 11	503100021	Di, Si V_R = 200V I_F = 1.1A	V06C	
CR12, 13	503103010	Diode Bridge	KBL02	
CR14	503100022	"	W02M	
	503200017	Cooler	WMC-19	For IC7, 8
Q1	503203068	T, NPN 60V 2A 2W	2SD1275	
Q2 ~ 4	503203014	T, NPN 30V 100mA 200mW	2SC1815, Y	
Q5, 6	503203068	T, NPN 60V 2A 2W	2SD1275	
Q5, 6	503200017	Cooler	WMC-19	
R1	501609774	R, Metal Film 1K 1W ±5%	RSF1B-1KJ	
R2	501810420	R, " 20K 1/4W ±1%	RN1/4-20KF	
R3, 4	501810310	R, " 1K " "	RN1/4-1KF	
R5	501810420	R, " 20K " "	RN1/4-20KF	
R6	501810456	R, " 56K " "	RN1/4-56KF	
R7	501810410	R, " 10K " "	RN1/4-10KF	
R8	501810210	R, " 100 " "	RN1/4-100F	
R9, 10	501810356	R, " 5.6K " "	RN1/4-5.6KF	
R11	501810382	R, " 8.2K " "	RN1/4-8.2KF	
R12	501609774	R, " 1K 1W ±5%	RSF1B-1KJ	
R13	501810356	R, " 5.6K 1/4W ±1%	RN1/4-5.6KF	
R14	501810320	R, " 2K " "	RN1/4-2KF	
R15	501609774	R, Metal Film 1K 1W ±5%	RSF1B-1KJ	
R16	501810356	R, " 5.6K 1/4W ±1%	RN1/4-5.6KF	
R17	501810351	R, " 5.1K " "	RN1/4-5.1KF	
R18	501810382	R, " 8.2K " "	RN1/4-8.2KF	
R19	501810320	R, " 2K " "	RN1/4-2KF	
R20	501810351	R, " 5.1K " "	RN1/4-5.1KF	
R101,102	501810410	R, " 10K " "	RN1/4-10KF	

PCB Power Supply (2/3)

Figure	Part No.	Description			Type	Remarks
VR1, 2	505103011	R, Trimmer Cermet	1K		GF06X1-1K	
C1	502403007	C, Ceramic	0.01μF	50WV	RPU06F103Z-L45AC	
C2	502103126	C, Electrolytic	1000μF	16WV	ECEA1CU102	
C3	502403007	C, Ceramic	0.01μF	50WV	RPU06F103Z-L45AC	
C4	502103086	C, Electrolytic	1000μF	35WV	ECEA1VU102	
C5	502103182	C, "	2200μF	"	ECEA1VU222	
C6 ~ 8	502403007	C, Ceramic	0.01μF	50WV	RPU06F103Z-L45AC	
C9	502103086	C, Electrolytic	1000μF	35WV	ECEA1VU102	
C10	502103185	C, "	4700μF	16WV	ECEA1CU472	
C11	502103182	C, "	2200μF	35WV	ECEA1VU222	
C12	502403007	C, Ceramic	0.01μF	50WV	RPU06F103Z-L45AC	
C13	502103181	C, Electrolytic	330μF	"	ECEA1HU331	
C14, 15	502403092	C, Ceramic	0.01μF	"	RPE122F104Z50	
C16	502103184	C, Electrolytic	10000μF	"	ECES1HU103U	
C17	502103183	C, "	"	35WV	ECES1VU103N	
C18	502103181	C, "	330μF	50WV	ECEA1HU331	
C19, 20	502103183	C, "	10000μF	35WV	ECES1VU103N	
C21, 22	502103078	C, "	2200μF	25WV	ECEA1EU222	
C23~25	502403007	C, Ceramic	0.01μF	50WV	RPU06F103Z-L45AC	
C26	502103185	C, Electrolytic	4700μF	16WV	ECEA1CU472	
C27	502103140	C, "	330μF	35WV	ECEA1VU331	
C28~31	502403007	C, Ceramic	0.01μF	50WV	RPU06F103Z-L45AC	
C32	502103105	C, Electrolytic	470μF	25WV	ECEA1EU471	
C33~35	502403007	C, Ceramic	0.01μF	50WV	RPU06F103Z-L45AC	
C36	502103105	C, Electrolytic	470μF	25WV	ECEA1EU471	
C37	502403007	C, Ceramic	0.01μF	50WV	RPU06F103Z-L45AC	
C38	502403092	C, Ceramic	0.1μF	"	RPE122F104Z50	
C101	502103186	C, Electrolytic	2200μF	35WV	ECEA1VGE222	
C102	502403092	C, Ceramic	0.1μF	50WV	RPE122F104Z50	
C103	502103186	C, Electrolytic	2200μF	35WV	ECEA1VGE222	
C104,105	502403092	C, Ceramic	0.1μF	50WV	RPE122F104Z50	
C110	502103184	C, Electrolytic	10000μF	"	ECES1HU103U	
IC6	040017200					
L1, 2, 3	518100032	Coil			HP105	
K1, 2	515110033	Relay	24V		HP2-DC24V	
K1, 2	515110034				PCB	
P1	513500483	Connector, Pin Header		10 pin	5275-10A	
P2	513400239	" , "		3 pin	5273-3A	
P3	513400180	" , "		7 pin	5273-7A	

PCB Power Supply (3/3)

Figure	Part No.	Description		Type	Remarks
P4	513500482	Connector, Pin Header	11 pin	5275-11A	
P5	513400241	" , "	5 pin	5273-05A	
P6	513400224	" , "	6 pin	5273-06A	
P7	513400038	" , "	2 pin	HNC2-2.5P-2DS	
P8	513400039	" , "	3 pin	HNC2-2.5P-3DS	
P9, 10	513400179	" , "	4 pin	5273-04A	
	513200202	" , Plug	2 pin	1625-2P-1	
	513400021	Contact Pin		1560TL	
BAT	518100012	Battery		3-51FT-P	
TP1 ~ 10	513400027	Test Pin		LC-1-G	
P.C.B.	213600300	Printed Circuit Board		PR3600-30A	

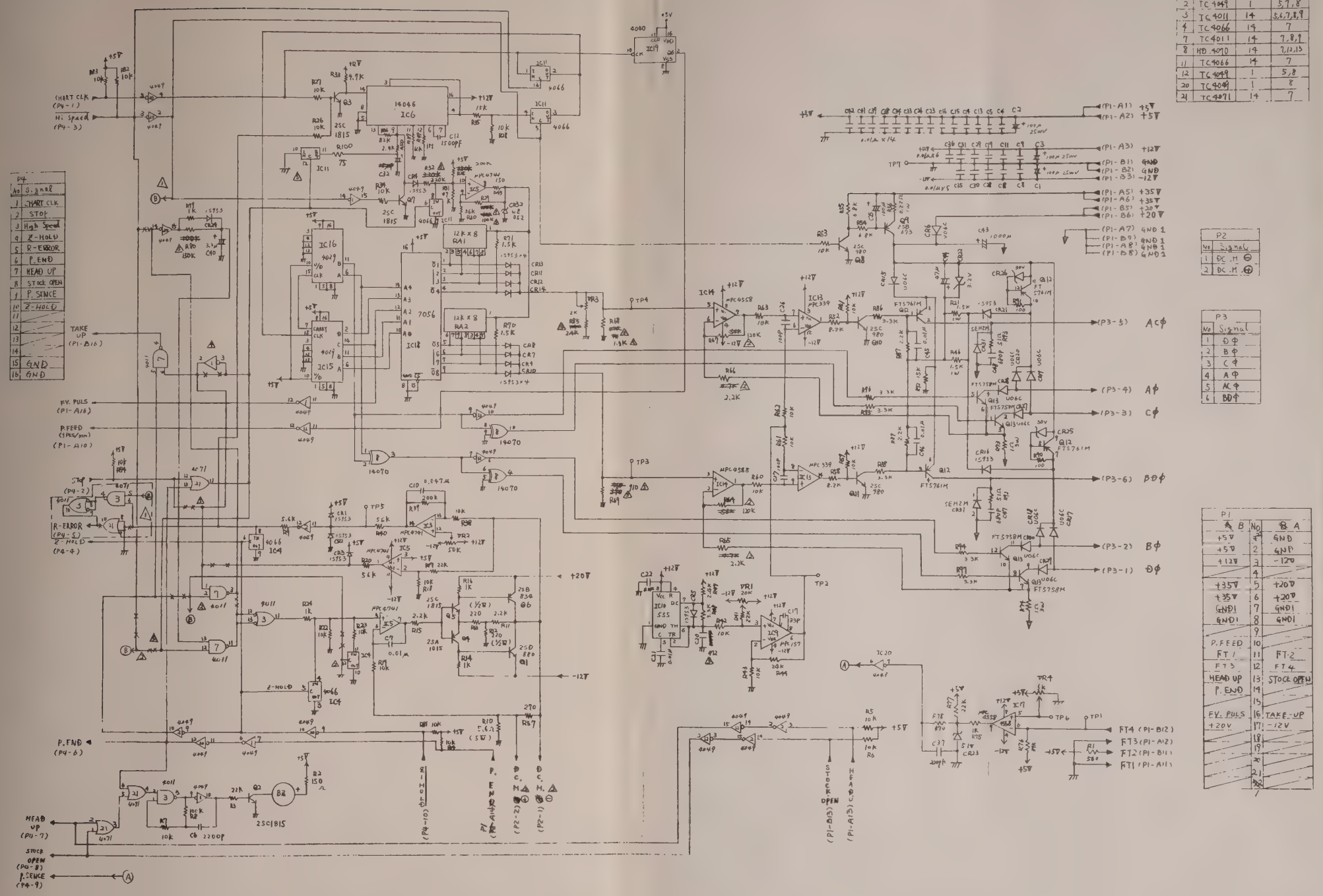

IC
+5V
GND
TC4049 1 3,5,8
TC4069 1 5,7,8
TC4011 14 5,6,7,8,9
TC4066 14 7
TC4011 14 7,8,9
HD4070 14 7,12,13
TC4066 14 7
TC4049 1 5,8
TC4049 1 8
TC4071 14 7
P4
No Signal
1 CHART CLK
2 STOP
3 High Speed
4 Z-HOLD
5 R-ERROR
6 P.END
7 HEAD UP
8 STOCK OPEN
9 P.SENCE
10 Z-HOLD
15 GND
16 GND
P2
No Signal
1 DC.M ⊖
2 DC.M ⊕
P3
No Signal
1 DΦ
2 BΦ
3 CΦ
4 AΦ
5 ACΦ
6 BDΦ
P1
No A B
1 +5V
2 +5V
3 +12V
4
5 +35V
6 +35V
7 GND1
8 GND1
9
10 P.FEED
11 FT1
12 FT3
13 HEAD UP
14 P.END
15
16 FV. PULS
17 +20V
18
19
20
21
22
No B A
1 GND
2 GND
3 -12V
4
5 +20V
6 +20V
7 GND1
8 GND1
9
10
11 FT2
12 FT4
13 STOCK OPEN
14
15
16 TAKE UP
17 -12V
18
19
20
21
22
CHART CLK (P4-1)
H. Speed (P4-3)
TAKE UP (P1-B16)
FV. PULS (P1-A16)
P.FEED (3PLS/mm) (P1-A10)
STOP (P4-2)
R-ERROR (P4-5)
Z-HOLD (P4-4)
P.END (P4-6)
HEAD UP (P4-7)
STOCK OPEN (P4-8)
P.SENCE (P4-9)
IC6 14046
IC16 4029
IC18 7056
IC15 4029
RA1 12k x 8
RA2 12k x 8
IC4 MPC0741
IC5 MPC0741
IC13 MPC339
IC14 MPC0558
IC9 MPC157
IC10 555
Q1 2SB834
Q2 2SC1815
Q3 2SC1815
Q4 2SA1015
Q5 2SA1015
Q6 2SB834
Q7 2SC1815
Q8 2SC980
Q9 2SC980
Q10 2SC980
Q11 2SC980
Q12 FT5761M
Q13 FT5758M
TP1
TP2
TP3
TP4
TP5
TP6
TP7
(P1-A1) +5V
(P1-A2) +5V
(P1-A3) +12V
(P1-B1) GND
(P1-B2) GND
(P1-B3) -12V
(P1-A5) +35V
(P1-A6) +35V
(P1-B5) +20V
(P1-B6) +20V
(P1-A7) GND 1
(P1-B7) GND 1
(P1-A8) GND 1
(P1-B8) GND 1
(P3-5) ACΦ
(P3-4) AΦ
(P3-3) CΦ
(P3-6) BDΦ
(P3-2) BΦ
(P3-1) DΦ
FT4 (P1-B12)
FT3 (P1-A12)
FT2 (P1-B11)
FT1 (P1-A11)
P.END (P2-2)
D.C.M. (P2-1)
OPEN (P1-B13)
(P1-A13) GND
7056 TRUTH TABLE
CLOCK A0 A1 A2 A3 A4
1 L L L L L
2 H L L L L
3 L H L L L
4 H H L L L
5 L L H L L
6 H L H L L
7 L H H L L
8 H H H L L
9 L L L H L
10 H L L H L
11 L H L H L
12 H H L H L
13 L L H H L
14 H L H H L
15 L H H H L
16 H H H H L
17 L L L L H
18 H L L L H
19 L H L L H
20 H H L L H
21 L L H L H
22 H L H L H
23 L H H L H
24 H H H L H
25 L L L H H
26 H L L H H
27 L H L H H
28 H H L H H
29 L L H H H
30 H L H H H
31 L H H H H
32 H H H H H

Chart Driver (1/4)

Figure	Part No.	Description	Type	Remarks
IC1, 2	503300094	IC, CMOS Hex Buffer/Converter	TC4049BP	
IC3	503300062	IC, CMOS Quad 2-Input NAND Gate	TC4011BP	
IC4	503300052	IC, CMOS Quad Bilateral Switch	TC4066BP	
IC5	503300034	IC, Quad Op-Amp	μPC4741C	
IC6	503302049	IC, CMOS Phase-Locked Loop	HD14046B	
IC7	503300062	IC, CMOS Quad 2-Input NAND Gate	TC4011BP	
IC8	503302050	IC, Quad Exclusive-OR Gate	HD14070B	
IC9	503300123	IC, Single Operational Amplifiers	μPC157C	
IC10	503303473	IC, Timer	μPC1555C	
IC11	503300052	IC, CMOS Quad Bilateral Switch	TC4066BP	
IC12	503300094	IC, CMOS Hex Buffer/Converter	TC4049BP	
IC13	503300121	IC, Comparator	μPC339C	
IC14	503300054	IC, Dual Operational Amplifiers	μPC4558C	
IC15, 16	503300107	IC, CMOS Presettable Up/Down Counter	TC4029BP	
IC17	503300054	IC, Dual Operational Amplifiers	μPC4558C	
IC18	503304069	IC, NMOS Bipolar Memory	MB7056-A95	
IC19	503303348	IC, CMOS Counter/Dividers	TC4040UBP	
IC20	503300094	IC, CMOS Hex Buffer/Converter	TC4049BP	
IC21	503300106	IC, CMOS Quad 2-Input OR Gate	TC4071BP	
CR1 ~ 5	503100020	Di, Si V_R = 30V I_F = 100mA	1S953	
CR6	503100021	Di, " V_R = 200V I_F = 1.1A	V06C	
CR7~14	503100020	Di, " V_R = 30V I_F = 100mA	1S953	
CR15	503103004	Di, " V_R = 200V I_F = 2A	U06C	
CR16	503100020	Di, " V_R = 30V I_F = 100mA	1S953	
CR17~20	503103004	Di, " V_R = 200V I_F = 2A	U06C	
CR21	503100020	Di, " V_R = 30V I_F = 100mA	1S953	
CR22	503100052	Di, Zener V_Z = 3.2V 500mW	RD3.3EB2	
CR23	503100060	Di, " V_Z = 5.1V "	RD5.1EB3	
CR24	503100020	Di, Si V_R = 30V I_F = 100mA	1S953	
CR25, 26	503100037	Di, Zener V_Z = 30V 1W	D30FB3	
CR27~30	503103004	Di, Si V_R = 200V I_F = 2A	U06C	
CR31	503100066	Di, Si Diode Module	5EH2M	
CR32	503100060	Di, Zener V_Z = 5.1V 500mW	RD5.1EB3	
Q1	503203047	T, NPN 60V 3A 30W	2SD880	
Q2, 3	503203014	T, NPN 30V 100mA 200mW	2SC1815, Y,	
Q4	503203016	T, PNP –30V –100mA 200mW	2SA1015	
Q5	503203014	T, NPN 30V 100mA 200mW	2SC1815, Y,	
Q6	503203048	T, PNP –60V –3A 30W	2SB834	
Q7	503203014	T, NPN 30V 100mA 200mW	2SC1815, Y,	

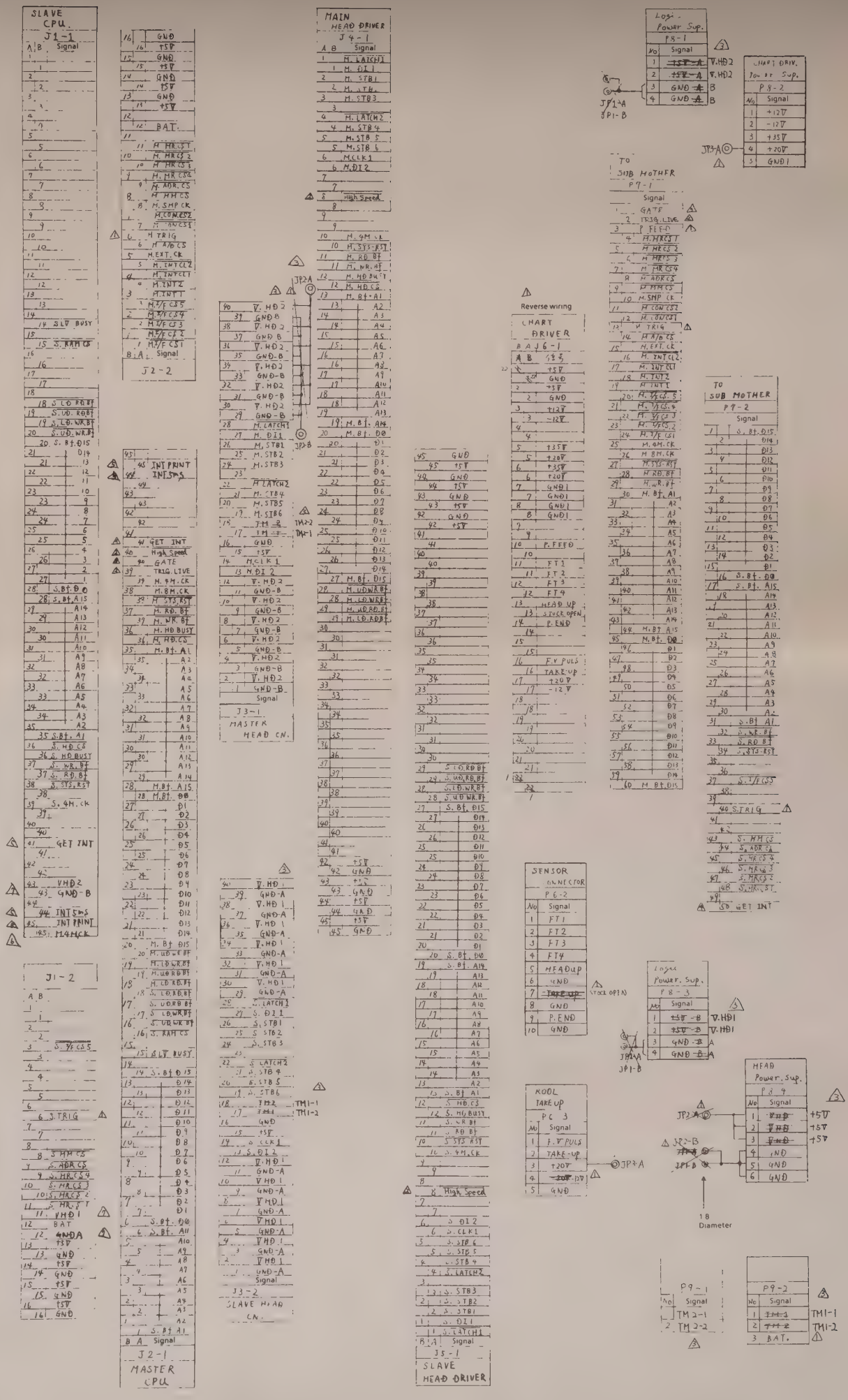
Chart Driver (2/4)

Figure	Part No.	Description	Type	Remarks
Q8	503203017	T, NPN 70V 100mA 400mW	2SC980	
Q9	503203026	T, PNP Darlington −100V −7A 40W	2SB673	
Q10, 11	503203017	T, NPN 70V 100mA 400mW	2SC980	
Q12	503203063	T, Array PNP Darlington x 4	FT5761M	
Q13	503203065	T, " NPN "	FT5758M	
R1	501810256	R, Metal Film 560 1/4W ±1%	RN1/4-560F	
R2	501810215	R, " 150 " "	RN1/4-150F	
R3	501810422	R, " 22K " "	RN1/4-22KF	
R4 ~ 7	501810410	R, " 10K " "	RN1/4-10KF	
R8	501810510	R, " 100K " "	RN1/4-100KF	
R9	501810356	R, " 5.6K " "	RN1/4-5.6KF	
R10	501609779	R, " 5.6 5W ±5%	RSF5B-5.6J	
R11	501810322	R, " 2.2K 1/4W ±1%	RN1/4-2.2KF	
R12, 13	501604703	R, " 220 1/2W ±5%	RSF1/2-220J	
R14	501810310	R, " 1K 1/4W ±1%	RN1/4-1KF	
R15	501810322	R, " 2.2K " "	RN1/4-2.2KF	
R16	501810310	R, " 1K " "	RN1/4-1KF	
R17	501810422	R, " 22K " "	RN1/4-22KF	
R18, 19	501810410	R, " 10K " "	RN1/4-10KF	
R20	501810456	R, " 56K " "	RN1/4-56KF	
R21	501605738	R, " 1.5K 1W ±5%	RSF1B-1.5KJ	
R22, 23	501810410	R, " 10K 1/4W ±1%	RN1/4-10KF	
R24	501810310	R, " 1K " "	RN1/4-1KF	
R25	501810520	R, " 200K " "	RN1/4-200KF	
R26~28	501810410	R, " 10K " "	RN1/4-10KF	
R29	501810510	R, " 100K " "	RN1/4-100KF	
R30	501810436	R, " 36K " "	RN1/4-36KF	
R31	501810447	R, " 47K " "	RN1/4-47KF	
R32	501810522	R, " 220K " "	RN1/4-220KF	
R33	501810347	R, " 4.7K " "	RN1/4-4.7KF	
R34	501810410	R, " 10K " "	RN1/4-10KF	
R35	501810415	R, " 15K " "	RN1/4-15KF	
R36	501810482	R, " 82K " "	RN1/4-82KF	
R37	501810412	R, " 12K " "	RN1/4-12KF	
R38	501810410	R, " 10K " "	RN1/4-10KF	
R39	501810520	R, " 200K " "	RN1/4-200KF	
R40	501810456	R, " 56K " "	RN1/4-56KF	
R41	501810422	R, " 22K " "	RN1/4-22KF	
R42, 43	501810410	R, " 10K " "	RN1/4-10KF	
R44	501810424	R, " 24K " "	RN1/4-24KF	
R45	501810215	R, " 150 " "	RN1/4-150F	
R46	501605738	R, " 1.5K 1W ±5%	RSF1B-1.5KJ	
R47	501810324	R, " 2.4K 1/4W ±1%	RN1/4-2.4KF	
R48	501810333	R, " 3.3K " "	RN1/4-3.3KF	

Chart Driver (3/4)

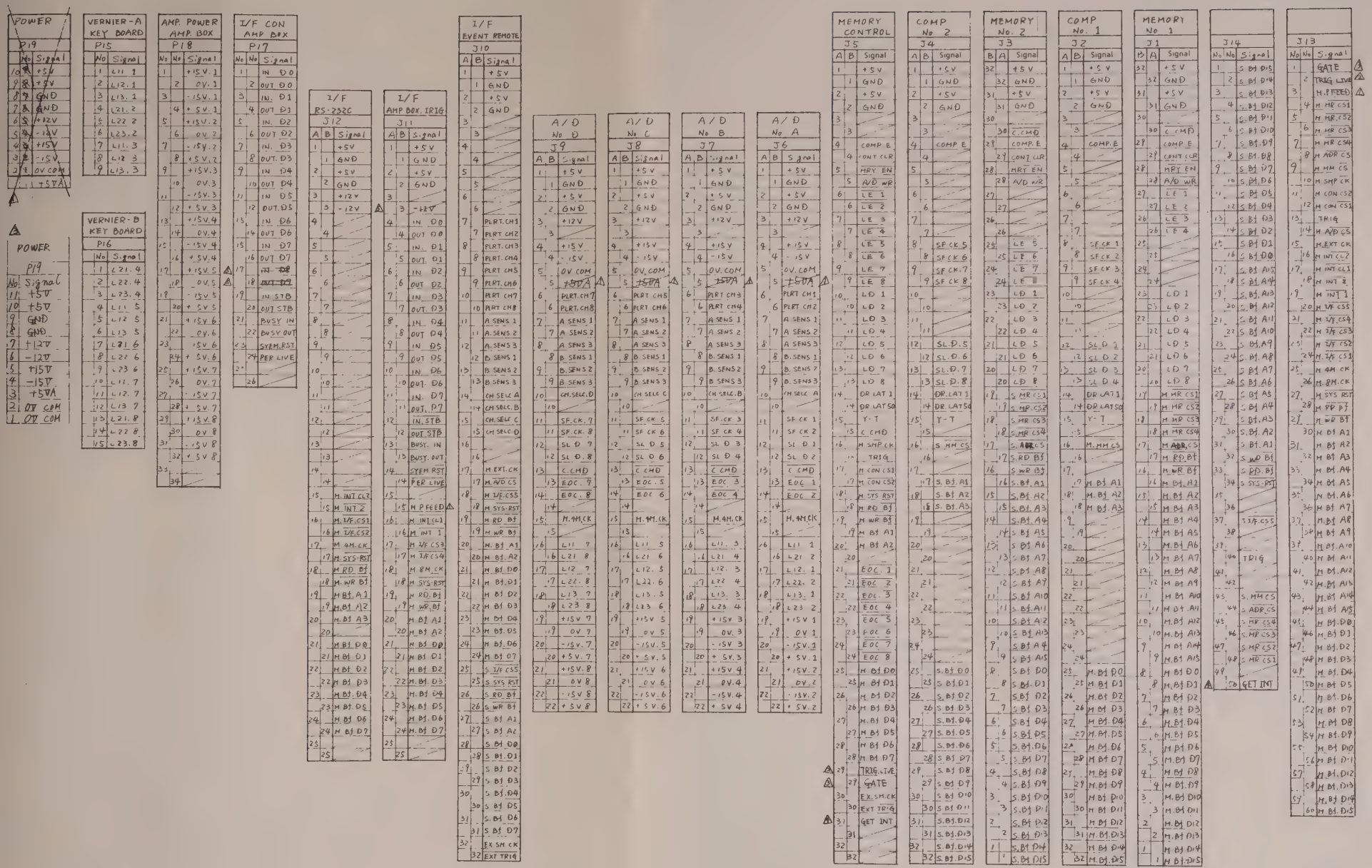
Figure	Part No.	Description				Type	Remarks
R49	501810610	R, Metal Film	1M	1/4W	±1%	RN1/4-1MF	
R50	501810324	R, "	2.4K	"	"	RN1/4-2.4KF	
R51	501810410	R, "	10K	"	"	RN1/4-10KF	
R52	501810382	R, "	8.2K	"	"	RN1/4-8.2KF	
R53	501810410	R, "	10K	"	"	RN1/4-10KF	
R54, 55	501810368	R, "	6.8K	"	"	RN1/4-6.8KF	
R56	501605732	R, "	0.22	1W	±5%	RSF1B-0.22J	
R57	501810227	R, "	270	1/4W	±1%	RN1/4-270F	
R58	501810382	R, "	8.2K	"	"	RN1/4-8.2KF	
R59~63	501810410	R, "	10K	"	"	RN1/4-10KF	
R64	501810512	R, "	120K	"	"	RN1/4-120KF	
R65, 66	501810322	R, "	2.2K	"	"	RN1/4-2.2KF	
R67	501810512	R, "	120K	"	"	RN1/4-120KF	
R68	501810313	R, "	1.3K	"	"	RN1/4-1.3KF	
R69	501810291	R, "	910	"	"	RN1/4-910F	
R70, 71	501810315	R, "	1.5K	"	"	RN1/4-1.5KF	
R72	501810415	R, "	15K	"	"	RN1/4-15KF	
R73, 74	501609723	R, "	1	3W	±5%	RSF3B-1J	
R75	501810310	R, "	1K	1/4W	±1%	RN1/4-1KF	
R76	501810439	R, "	39K	"	"	RN1/4-39KF	
R77	501810422	R, "	22K	"	"	RN1/4-22KF	
R78	501810247	R, "	470	"	"	RN1/4-470F	
R79	501810310	R, "	1K	"	"	RN1/4-1KF	
R80	501810515	R, "	150K	"	"	RN1/4-150KF	
R81~84	501810410	R, "	10K	"	"	RN1/4-10KF	
R85	501810324	R, "	2.4K	"	"	RN1/4-2.4KF	
R86	501810333	R, "	3.3K	"	"	RN1/4-3.3KF	
R87	501810322	R, "	2.2K	"	"	RN1/4-2.2KF	
R88	501810333	R, "	3.3K	"	"	RN1/4-3.3KF	
R89	501810322	R, "	2.2K	"	"	RN1/4-2.2KF	
R90, 91	501810210	R, "	100	"	"	RN1/4-100F	
R92, 93	501810151	R, "	51	"	"	RN1/4-51F	
R94~97	501810333	R, "	3.3K	"	"	RN1/4-3.3KF	
R100	501810175	R, "	75	"	"	RN1/4-75F	
VR1	505103023	R, Trimmer Cermet	20K			GF06x1-20K	
VR3	505103009	R, "	2K			GF06x1-2K	
VR4	505103019	R, "	5K			GF06x1-5K	
C1 ~ 3	502103189	C, Electrolytic	100μF	25WV		ECEA1EGE101	
C4, 5	502403007	C, Ceramic	0.01μF	50WV		ROU06F103Z-L45AC	
C6	502303001	C, Mylar Film	0.0022μF	"		MFL-05D22	
C7	502303004	C, "	0.01μF	"		MFL-05S1	
C8, 9	502403007	C, Ceramic	0.01μF	"		ROU06F103Z-L45AC	
C10	502303005	C, Mylar Film	0.047μF	"		MFL-05S47	

Parts	Part	Description			Type	Remarks
C11	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C12	502303019	C, Mylar Film	0.0015μF	"	MFL-05D15	
C13~16	502403007	C, Ceramic	0.01μF	"	ROU06F103Z-L45AC	
C17	502403034	C, "	33pF	"	RAU04SL330KL0[illegible]	
C18, 19	502403007	C, "	0.01μF	"	ROU06F103Z-L45AC	
C20	502303007	C, Mylar Film	0.0047μF	"	MFL-05D47	
C21	502303004	C, "	0.01μF	"	MFL-05S1	
C22~24	502403007	C, Ceramic	0.01μF	"	ROU06F103Z-L45AC	
C25	502103177	C, Electrolytic	100μF	10WV	ECEA1AGE101	
C26, 27	502403029	C, Ceramic	100pF	50WV	RAU04SA101JL05AC	
C28~31	502403007	C, "	0.01μF	"	ROU06F103Z-L45AC	
C32	502203001	C, Tantalum	22μF	16WV	CS15E1C220M	
C33~36	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C37	502403035	C, "	220pF	"	RAU05SA221JL05AC	
C38, 39	502403007	C, "	0.01μF	"	ROU06F103Z-L45AC	
C40	502203046	C, Tantalum	3.3μF	16WV	CS15E1V3R3M	
C41, 42	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C43	502403037	C, Electrolytic	1000μF	"	FTE1G102	
C44	502103186	C, Electrolytic	47μF	35WV	ECEA1VGE470	
C45, 46	502303004	C, Mylar Film	0.01μF	50WV	MFL-05S1	
C47, 48	502403036	C, Ceramic	680pF	"	RAU08SA681JL45AC	
P1	513500485				8341-044-294	
P2	513400106	Connector, Pin Header		2 pin	HNC2-2.5P2DSL	
P3	513400046	" , "		6 pin	HNC2-2.5P-6DSL	
P4	513500484	" , "		16 pin	FCN744P16AU1R	
TP1 ~ 7	513400027	Test Terminal			LC-1-G	
P.C.B.	213600040	Printed Circuit Board			PR3600-04A	
Q1, 6, 9	520100012				30B6001	


SLAVE CPU
J1-1
A B Signal
J2-2
MAIN HEAD DRIVER
J4-1
A B Signal
Logic Power Sup.
P8-1
No Signal
CHART DRIV. Power Sup.
P8-2
No Signal
TO SUB MOTHER
P7-1
Signal
TO SUB MOTHER
P7-2
Signal
Reverse wiring
CHART DRIVER
BAJ6-1
A B
J3-1
MASTER HEAD CN.
J3-2
SLAVE HEAD CN.
J1-2
A B
J2-1
MASTER CPU
J5-1
SLAVE HEAD DRIVER
SENSOR CONNECTOR
P6-2
No Signal
KOOL TAKE UP
PC3
No Signal
HEAD Power Sup.
P8-4
No Signal
P9-1
No Signal
TM2-1
TM2-2
P9-2
No Signal
1 BAT.
18 Diameter

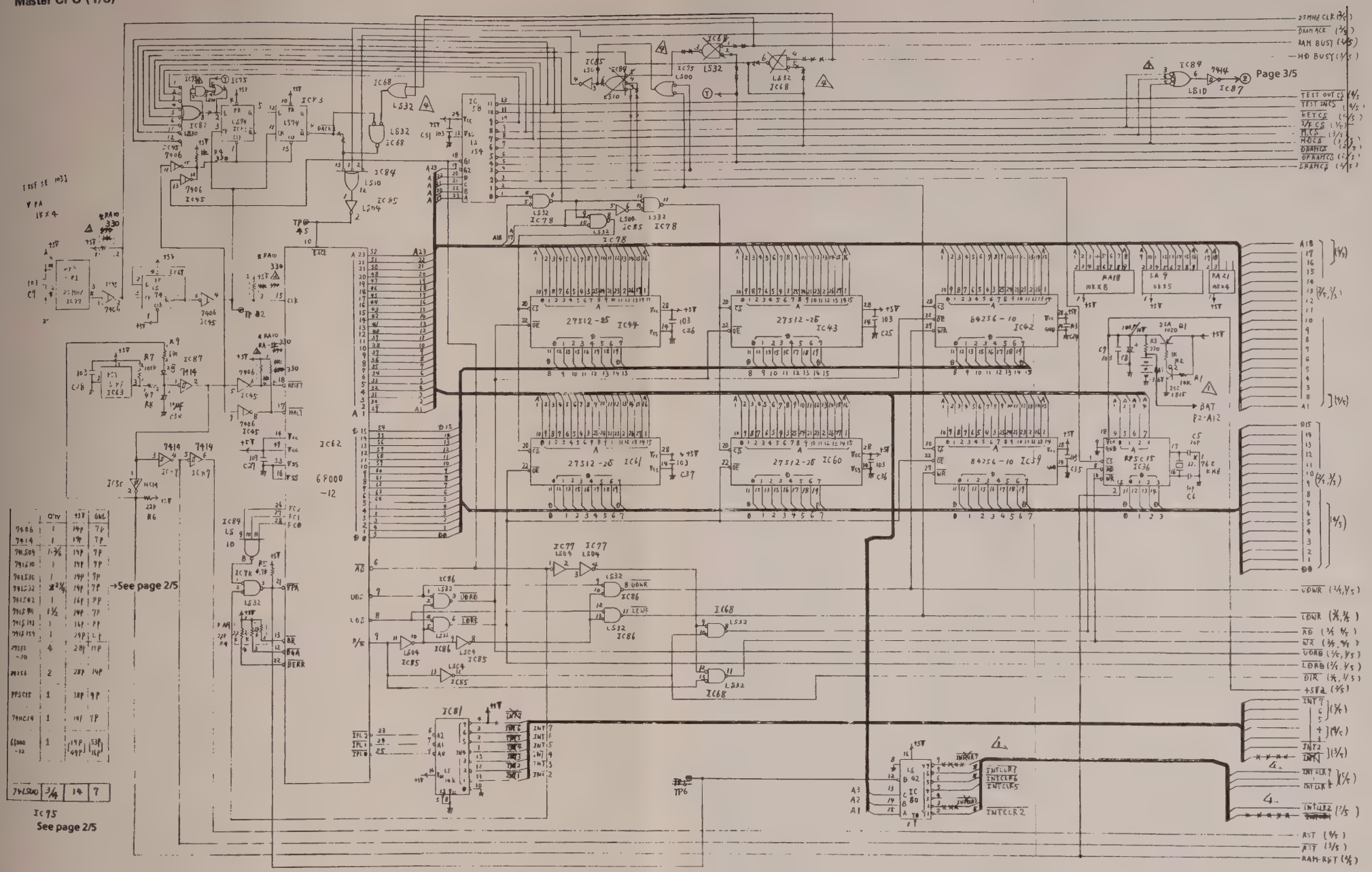
Main Mother Board (1/1)

Figure	Part No.	Description		Type	Remarks
J1-1	513500486	Connector	90 pin	8330-090-283	
J1-2	513500487	"	32 pin	8330-032-283	
J2-1	513500486	"	90 pin	8330-090-283	
J2-2	513500487	"	32 pin	8330-032-283	
J3-1, 3-2	513500489	"	40 pin	FCN-744Q040-AU10	
J4-1, 5-1	513500486	"	90 pin	8330-090-283	
J6-1	513500488	"	44 pin	8330-044-283	
P6-2	513400040	Connector	10 pin	HNC-2.5P-10DS	
P6-3	513400102	"	5 pin	HNC-2.5P-5DS	
P7-1	513500490	"	60 pin	FCN-745Q060-AU10	
P7-2	513500491	"	50 pin	FCN-745Q050-AU10	
P8-1	513500492	"	4 pin	5274-04A	
P8-2	513500493	"	5 pin	5274-05A	
P8-3	513500492	"	4 pin	5274-04A	
P8-4	513400251	"	4 pin	5274-06A	
P9-1	513400106	"	2 pin	HNC-2.5P-2DSL	
P9-2	513400060	"	3 pin	HNC-2.5P-3DSL	
P.C.B.	213600050	Printed Circuit Board		3600-05	
BUS-1	514200701	Bus Bar	350mm	T125-50-350	
BUS-2	514200701	"	350mm	T125-50-350	

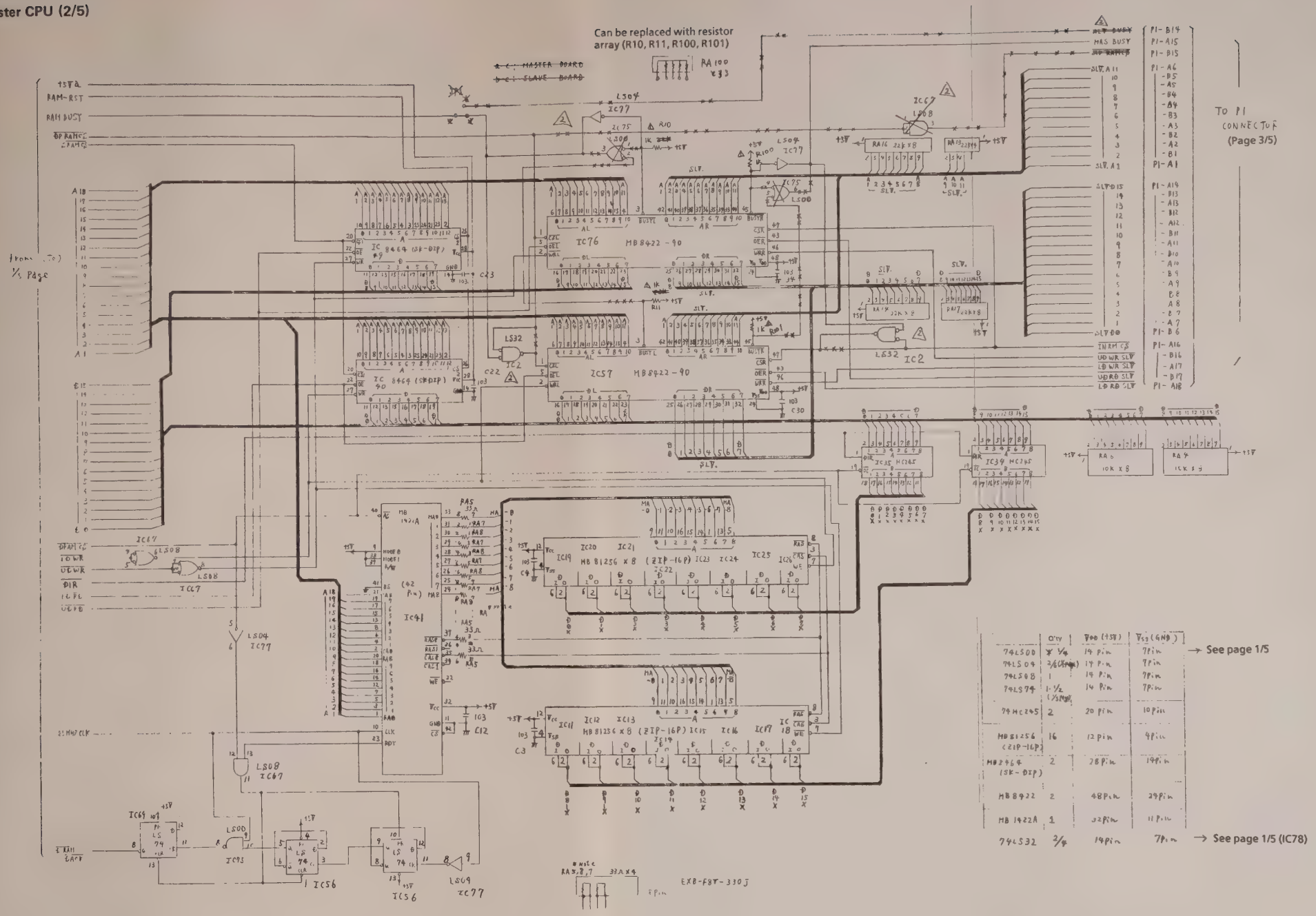

POWER
P19
VERNIER-A KEY BOARD
P15
VERNIER-B KEY BOARD
P16
AMP. POWER AMP. BOX
P18
I/F CON AMP BOX
P17
I/F RS-232C
J12
I/F AMP BOX. IRIG
J11
I/F EVENT REMOTE
J10
A/D No D
J9
A/D No C
J8
A/D No B
J7
A/D No A
J6
MEMORY CONTROL
J5
COMP No 2
J4
MEMORY No. 2
J3
COMP No. 1
J2
MEMORY No. 1
J1
J14
J13

Sub Mother Board (1/1)

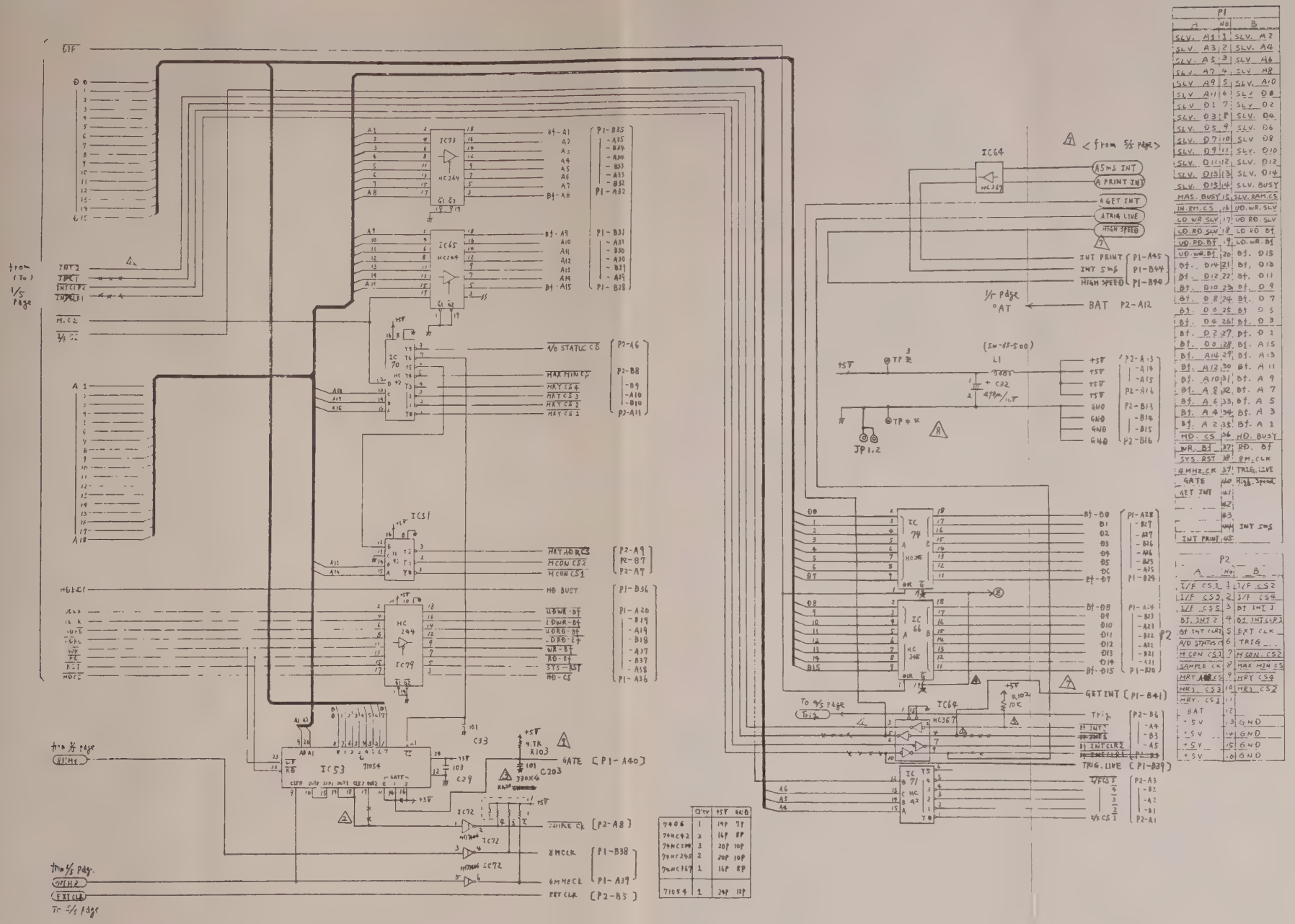
Figure	Part No.	Description		Type	Remarks
J1 ~ 5	513500494	Connector, Receptacle	64 pin	8330-064-283	
J6 ~ 9	513500488	" , "	44 pin	8330-044-283	
J10	513500494	" , "	64 pin	8330-064-283	
J11 ~ 12	513500496	" , "	50 pin	8330-050-283	
J13	521000298	Flat Cable	60 pin	9500-06 (60P)	
J14	521000299	"	50 pin	9500-07 (50P)	
P17	513500497	Connector, Pin Header	34 pin	744P034-AU/R	
P18	513500498	" , "	26 pin	744P026-AU/R	
P19	513500482	" , "	11 pin	5275-11A	
P.C.B.	213600140	Printed Circuit Board		3600-14	
	520100014			Color Bush TB-300	
	306500300			One Touch Color TA-307	
BUS-1, 2	514200703	Bus Bar	360mm	T120-60-360	
BUS-3, 4	514200702	Bus Bar	90mm	T115-30-90	

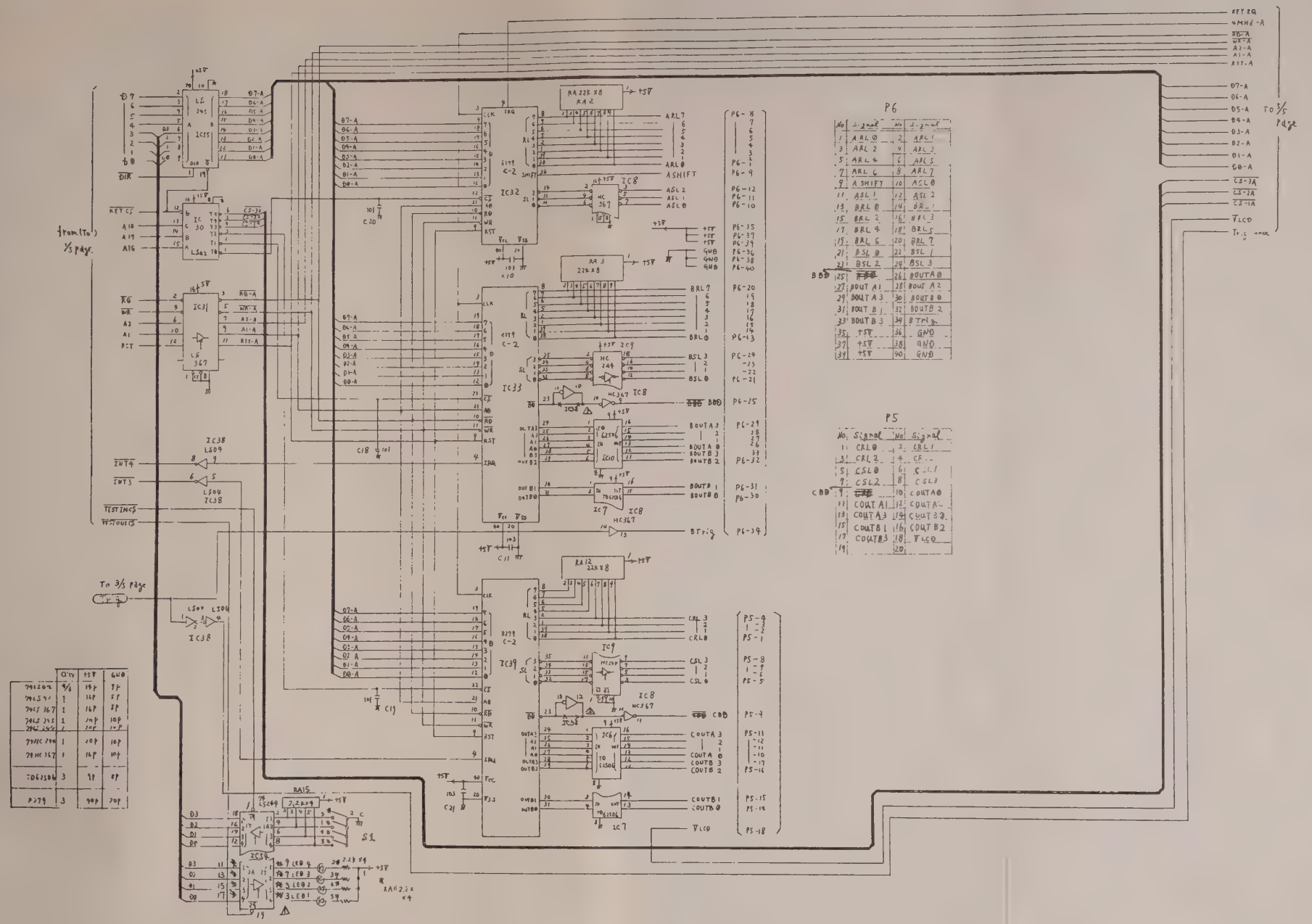

Page 3/5
→See page 2/5
See page 2/5
IC75
68000 -12
27512-25 IC44
27512-25 IC43
84256-10 IC42
27512-25 IC41
27512-25 IC40
84256-10 IC39
RPIC18 IC36
IC62
IC87
IC68
IC84
IC85
IC78
IC86
IC81
IC77
IC79
IC68
TP6
TP5
TP2
TP3
TP4
25MHz CLK
DMACK
RAM BUSY
HD BUSY
TEST OUT
TEST INCS
KEYCS
VFCS
MICS
MOCS
DPRAMCS
DPRAMCS
SRAMCS
A18
D15
D0
UDWR
LDWR
RD
WR
UDRD
LDRD
DTR
+5V
INT7
INT2
INT1
INTCLR7
INTCLR6
INTCLR5
INTCLR2
RST
RST
RAM-RST
BAT
P2-A12

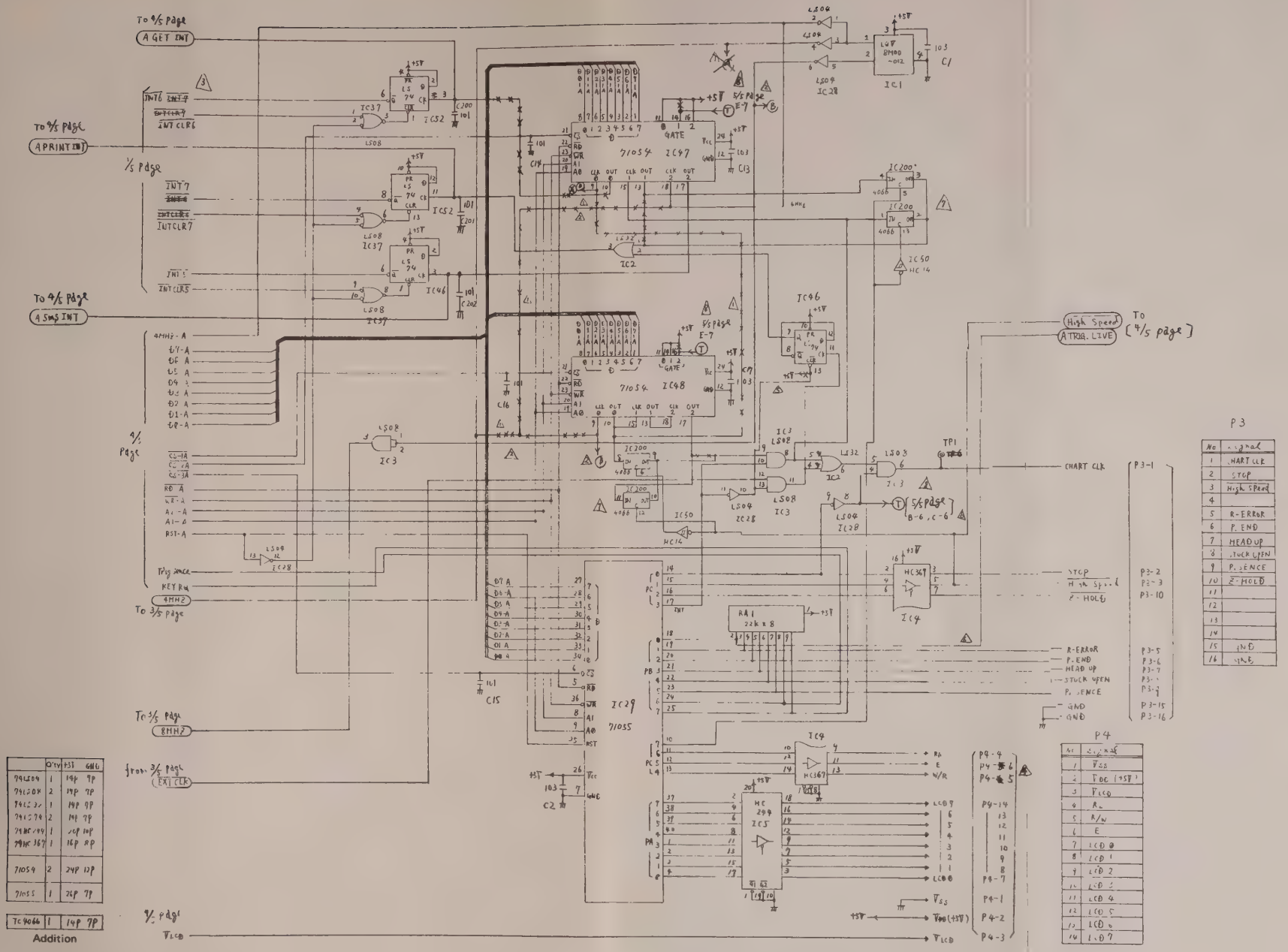
Master CPU (2/5)



	Q'ty	V_{DD} (+5V)	V_{SS} (GND)	
74LS00	1/4	14 Pin	7Pin	→ See page 1/5
74LS04	3/6 (Spare)	14 Pin	7Pin	
74LS08	1	14 Pin	7Pin	
74LS74	1-1/2 (3/4 Spare)	14 Pin	7Pin	
74HC245	2	20 Pin	10Pin	
MB81256 (ZIP-16P)	16	12 Pin	4Pin	
MB2464 (SK-DIP)	2	28Pin	14Pin	
MB8422	2	48Pin	24Pin	
MB1422A	1	32Pin	11Pin	
74LS32	3/4	14Pin	7Pin	→ See page 1/5 (IC78)




P6
P5
RA 22K X8
RA 3 22K X8
RA12 22K X8
RA15
IC38 LS04
S1
To 3/5 page
from(to) 1/5 page



	Q'ty	+5V	GND
74LS04	1	14P	7P
74LS08	2	14P	7P
74LS32	1	14P	7P
74LS74	2	14P	7P
74HC/HCT	1	16P	8P
74HC367	1	16P	8P
71054	2	24P	12P
71055	1	26P	7P
TC9066	1	14P	7P

Addition

No	Signal
1	CHART CLK
2	STOP
3	High Speed
4	
5	R-ERROR
6	P. END
7	HEAD UP
8	STUCK OPEN
9	P. SENCE
10	Z-HOLD
11	
12	
13	
14	
15	GND
16	GND

P3

No	Signal
1	$\overline{V_{SS}}$
2	$\overline{V_{DD}}$ (+5V)
3	$\overline{V_{LCD}}$
4	R/W
5	E
6	LCD 0
7	LCD 1
8	LCD 2
9	LCD 3
10	LCD 4
11	LCD 5
12	LCD 6
13	LCD 7

P4

Master CPU (1/4)

Figure	Part No.	Description	Type	Remarks
IC1	503303871	IC, Clock Generator 8MHz	LQV-8M00-012	
IC2	503303855	IC, TTL Quad 2-Input OR Gates	M74LS32	
IC3	503301185	IC, TTL Quad 2-Input AND Gates	M74LS08	
IC4	503303908	IC, CMOS Hex Bus Buffer	TC74HC367	
IC5	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC6, 7	503303838	IC, Transistor Array	TD62506	
IC8	503303908	IC, CMOS Hex Bus Buffer	TC74HC367	
IC9	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC10	503303838	IC, Transistor Array	TD62506	
IC11~26	503304048	IC, NMOS 256K-BIT DYNAMIC RAM	MB81256-12PSZ	
IC27	503304049	IC, Clock Generator 25MHz	KXO-01 25MHz	
IC28	503303471	IC, TTL Hex Inverters	M74LS04	
IC29	503303935	IC, CMOS P.I.O.	μPD71055C	
IC30	503303186	IC, TTL BCD-to-Decimal Decoder	M74LS42	
IC31	503303956	IC, TTL Hex Bus Drivers	M74LS367	
IC32, 33	503303982	IC, NMOS Key & Display Controller	μPD8279C-2	
IC34, 35	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245	
IC36	503303824	IC, Timer	RP5C15	
IC37	503301185	IC, TTL Quadruple 2-Input AND Gates	M74LS08	
IC38	503303471	IC, TTL Hex Inverter	M74LS04	
IC39	503303982	IC, NMOS Key & Display Controller	μPD8279C-2	
IC40	503304045	IC, CMOS 64K-BIT STATIC RAM	MB8464A10LPSK	
IC41	503304047	IC, BIPOLAR Dynamic RAM Controller	MB1422AP	
IC42	503304044	IC, CMOS 256K-BIT STATIC RAM	MB84256-10LPG	
IC44	503304043	IC, CMOS 512K-BIT EPROM	MBM27C512-25	
IC45	503303784	IC, TTL Hex Inverters O.C	HD7406	
IC46	503303470	IC, TTL Dual D-type Flip-Flops	M74LS74	
IC47, 48	503303981	IC, CMOS Programmable Timer Counter	μPD71054C	
IC49	503304045	IC, CMOS 64K-BIT STATIC RAM	MB8464A10LPSK	
IC50	503303887	IC, CMOS Hex Schmitt Inverter	TC74HC14	
IC51	503303803	IC, CMOS BCD To Decimal Decoder	TC74HC42	
IC52	503303470	IC, TTL Dual D-type Flip-Flops	M74LS74	
IC53	503303981	IC, CMOS Programmable Timer Counter	μPD71054C	
IC54	503303872	IC, TTL Octal 3-State Bus Buffers	M74LS244	
IC55	503303925	IC, TTL Octal Bus Transceivers	M74LS245	
IC56	503303470	IC, TTL Dual D-type Flip-Flop	M74LS74	
IC57	503304046	IC, CMOS 16K-BIT Dual Port STATIC RAM	MB8422-90LP	
IC58	503304052	IC, 4-Line-to-16-Line Decoders	M74154	
IC59	503304044	IC, CMOS 256K-BIT STATIC RAM	MB84256-10LPG	
IC61	503304043	IC, CMOS 512K-BIT EPROM	MBM27C512-25	
IC62	503304068	IC, NMOS CPU	MC68000P12	
IC63	503301188	IC, Reset	PST518A	
IC64	503303981	IC, CMOS Hex Bus Buffer	TC74HC367	

Master CPU (2/4)

Figure	Part No.	Description	Type	Remarks
IC65	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC66	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245	
IC67	503301185	IC, TTL Quad AND Gates	M74LS08	
IC68	503303855	IC, TTL Quad OR Gates	M74LS32	
IC69	503303470	IC, TTL Dual D-type Flip-Flop	M74LS74	
IC70, 71	503303803	IC, CMOS BCD To Decimal Decoder	TC74HC42	
IC72	503303784	IC, TTL Inverter O.C.	HD7406	
IC73	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC74	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245	
IC75	503303474	IC, TTL Quad NAND Gates	M74LS00	
IC76	503304046	IC, CMOS 16K-BIT Dual Port STATIC RAM	MB8422-90LP	
IC77	503303471	IC, TTL Hex Inverter	M74LS04	
IC78	503303855	IC, TTL Quad OR Gates	M74LS32	
IC79	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC80	503303186	IC, TTL BCD-to-Decimal Decoder	M74LS42	
IC81	503304051	IC, TTL Octal Priority Encoder	M74LS148	
IC82	503304028	IC, TTL 8-Input NAND Gate	M74LS30	
IC83	503303470	IC, TTL Dual D-type Flip-Flop	M74LS74	
IC84	503303867	IC, TTL Triple 3-Input NAND Gates	M74LS10	
IC85	503303471	IC, TTL Hex Inverters	M74LS04	
IC86	503303855	IC, TTL Triple 3-Input NAND Gates	M74LS10	
IC87	503304050	IC, TTL Hex Schmitt Trigger Inverters	HD7414	
IC200	503300052	IC, CMOS Quad Bilateral Switch	TC4066BP	
CR1	503100020	Di, Si V_R = 30 I_F = 100mA	1S953	
Q1	503203019	T, PNP −50V −2A 900mW	2SA1020, A	
Q2	503203014	T, NPN 30V 100mA 200mW	2SC1815, Y,	
R1	501810410	R, Metal Film 10K 1/4W ±1%	RN1/4-10KF	
R2	501810310	R, " 1K " "	RN1/4-1KF	
R3	501810222	R, " 220 " "	RN1/4-220F	
R4	501810233	R, " 330 " "	RN1/4-330F	
R5	501810347	R, " 4.7K " "	RN1/4-4.7KF	
R6	501810422	R, " 22K " "	RN1/4-22KF	
R7	501810511	R, " 100K " "	RN1/4-100KF	
R8	501810147	R, " 47 " "	RN1/4-47F	
R9	501810268	R, " 680 " "	RN1/4-680F	
R10, 11	501810510	R, " 1K " "	RN1/4-1KF	
R100,101	501810310	R, " 1K " "	RN1/4-1KF	
R102	501810410	R, " 10K " "	RN1/4-10KF	
R103	501810347	R, " 4.7K " "	RN1/4-4.7KF	
C1 ~ 4	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
C5, 6	502703009	C, Mica 30pF 100WV	Z05-100V30PF	

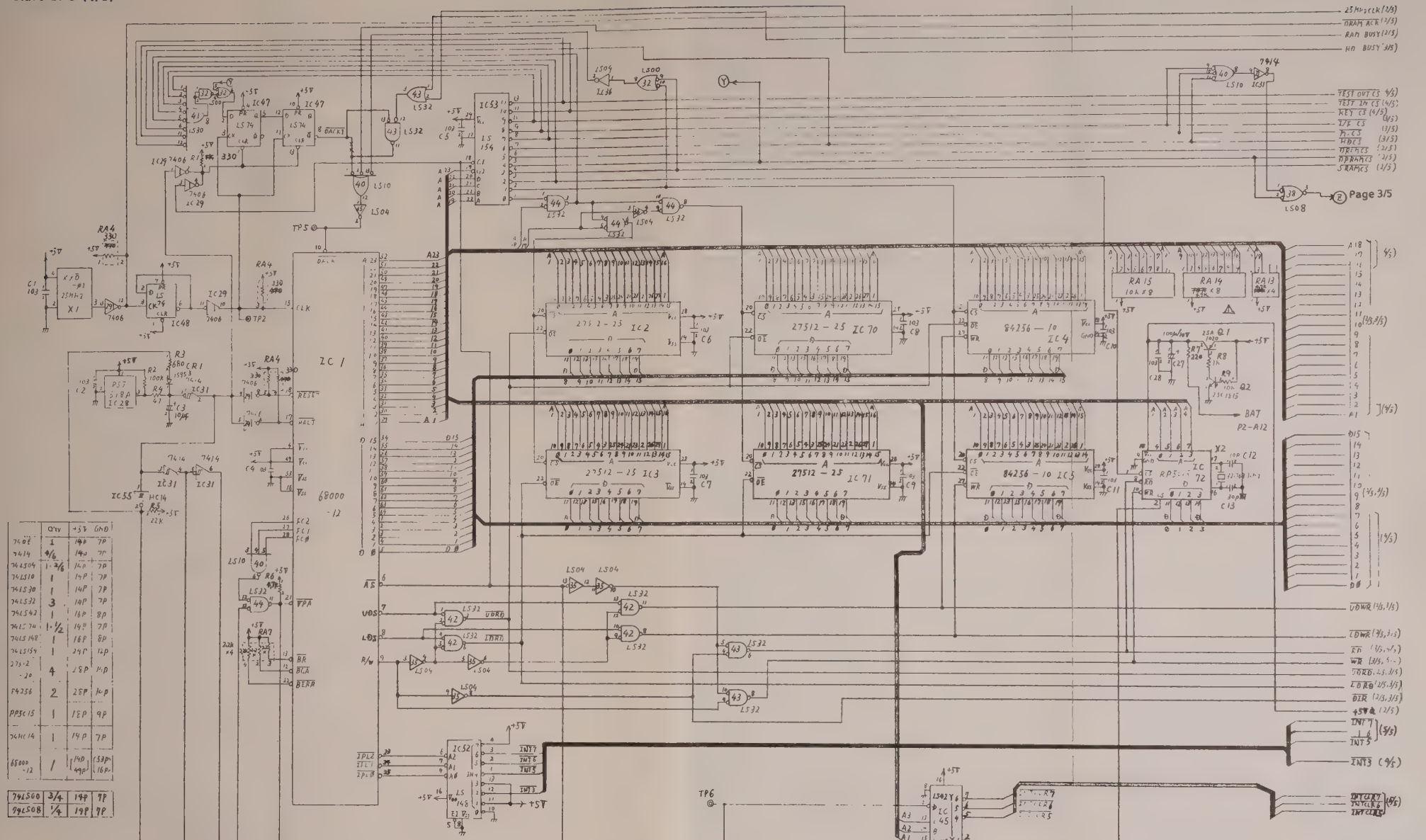
Master CPU (3/4)

Figure	Part No.	Description			Type	Remarks
C7	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C8	502103177	C, Electrolytic	100μF		ECEA1AGE101	
C9 ~ 13	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C14 ~ 16	502703001	C, Mica	100pF	100WV	Z08-100V100K	
C17	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C18 ~ 20	502703001	C, Mica	100pF	100WV	Z08-100V100K	
C21 ~ 31	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C32	502103187	C, Electrolytic	470μF	10WV	ECEA1AGE471	
C33	502703001	C, Mica	100pF	100WV	Z08-100V100K	
C34 ~ 37	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C38	502103190	C, Electrolytic	10μF	16WV	ECEA1CGE100	
C200~ 203	502703001	C, Mica	100pF	100WV	Z08-100V100K	
RA1 ~ 3	501002831	Resistor Array	22K		EXBF9E-223J	
RA4	501002813	"	10K		EXBF9E-103J	
RA5	501003445	"	33		EXBF8V-330J	
RA6	501002813	"	10K		EXBF9E-103J	
RA7, 8	501003445	"	33		EXBF8V-330J	
RA9	501002813	"	10K		EXBF9E-103J	
RA10	501003424	"	330		EXBF5E-331J	
RA11	501002812	"	2.2K		EXBF5E-222J	
RA12	501002831	"	22K		EXBF9E-223J	
RA13	501002832	"	22K		EXBF5E-223J	
RA14	501002831	"	22K		EXBF9E-223J	
RA15	501002812	"	2.2K		EXBF9E-222J	
RA16, 17	501002831	"	22K		EXBF9E-223J	
RA18	501002813	"	10K		EXBF9E-103J	
RA19	501002812	"	2.2K		EXBF5E-222J	
RA20	501003424	"	330		EXBF5E-331J	
RA21	501003329	"	10K		EXBF5E-103J	
	520100036				CBI Ejector CBE-12	
X1	502901015	Crystal			KF38G (32.768K)	
TP1 ~ 6	513400027	Test Terminal			LC-1-G	
	513400021	Contact Pin			1560TL	
L1	518110008	Coil			SN-8S-500	
S1	508101024	Switch			KDS16-122	
P1	513500503	Connector, Pin Header		90 pin	8341-090-294	
P2	513500504	" , "		32 pin	8341-032-294	
P3	513500500	" , "		16 pin	FCN-745Q016-AU10	

Master CPU (4/4)

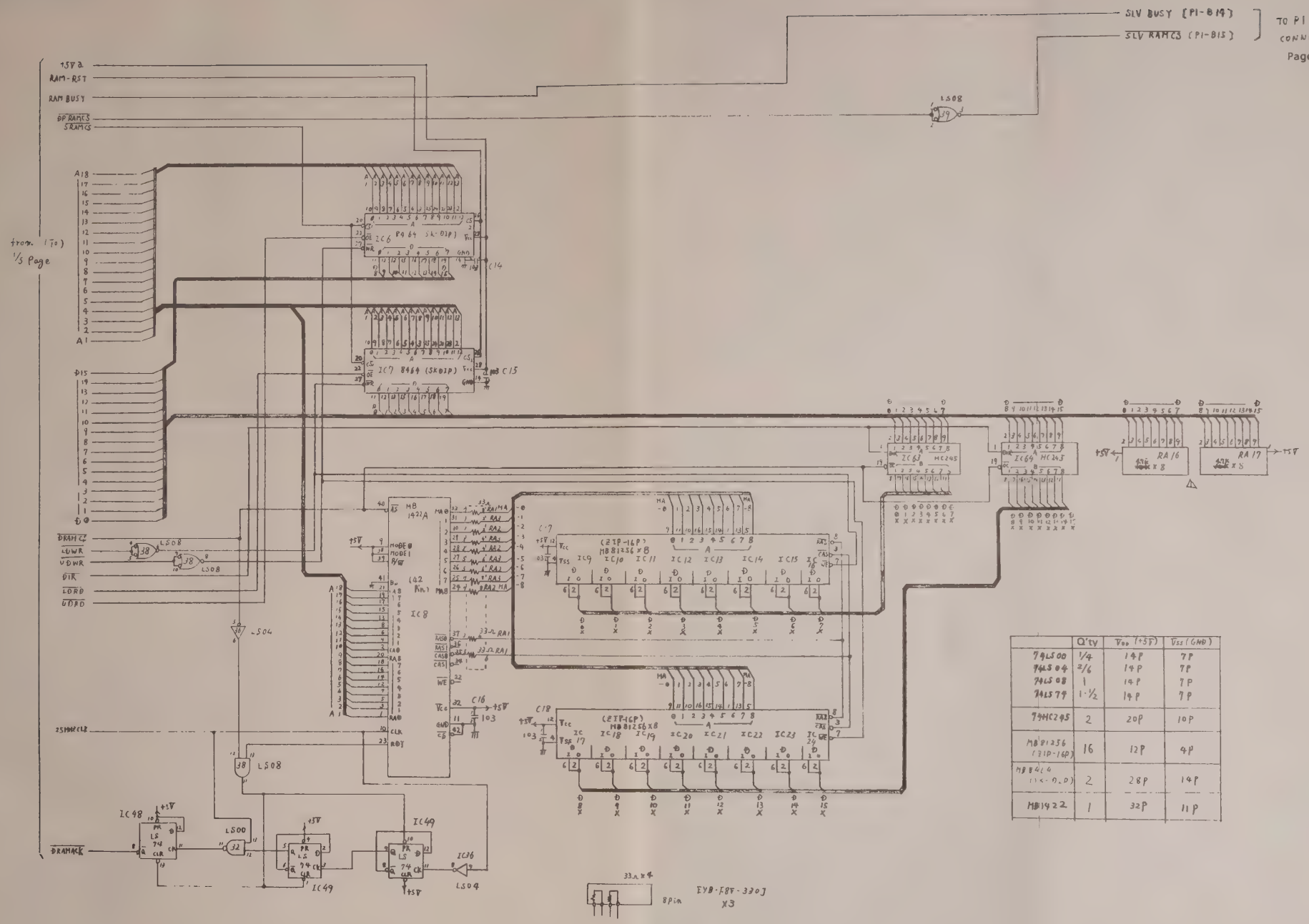
Figure	Part No.	Description		Type	Remarks
P4	513500499	Connector, Pin Header	14 pin	FCN-745Q014-AU10	
P5	513500501	" , "	20 pin	FCN-745Q020-AU10	
P6	513500502	" , "	40 pin	FCN-745Q040-AU10	
	513200202	" , Plug	2 pin	1625-2P-1	
IC43, 44, 60, 61	513400119	IC Socket		228-AG29D	
P.C.B.	213600020	Printed Circuit Board		PR3600-02	

Slave CPU (1/5)

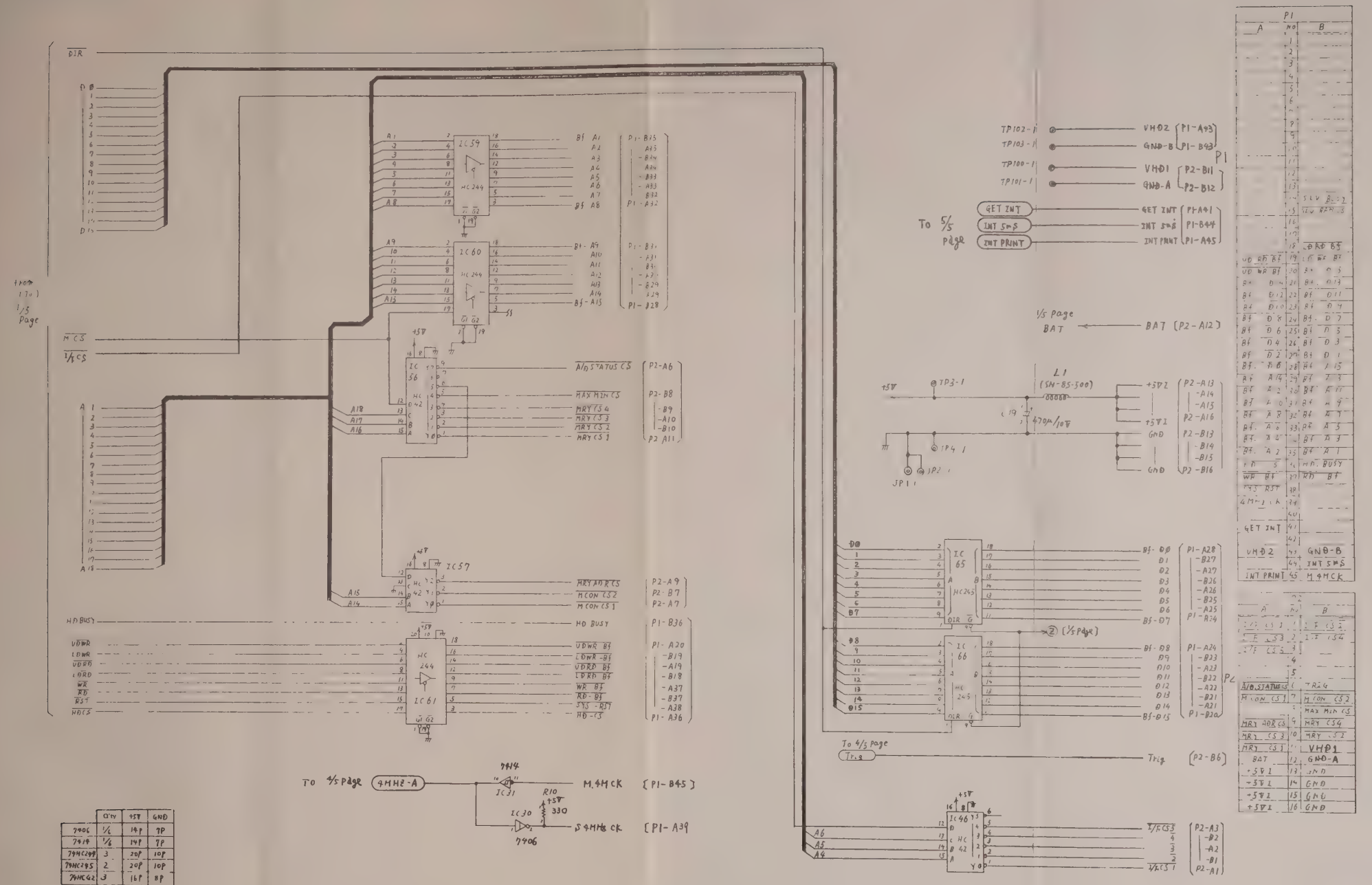


7406	1	14P	7P
7414	6/6	14P	7P
74LS04	1 3/6	14P	7P
74LS10	1	14P	7P
74LS30	1	14P	7P
74LS32	3	14P	7P
74LS42	1	16P	8P
74LS74	1 1/2	14P	7P
74LS148	1	16P	8P
74LS154	1	24P	12P
27S12 -20	4	28P	14P
F4256	2	28P	14P
PPSC15	1	18P	9P
74HC14	1	14P	7P
68000 -12	1	64P 48P	32P 16P

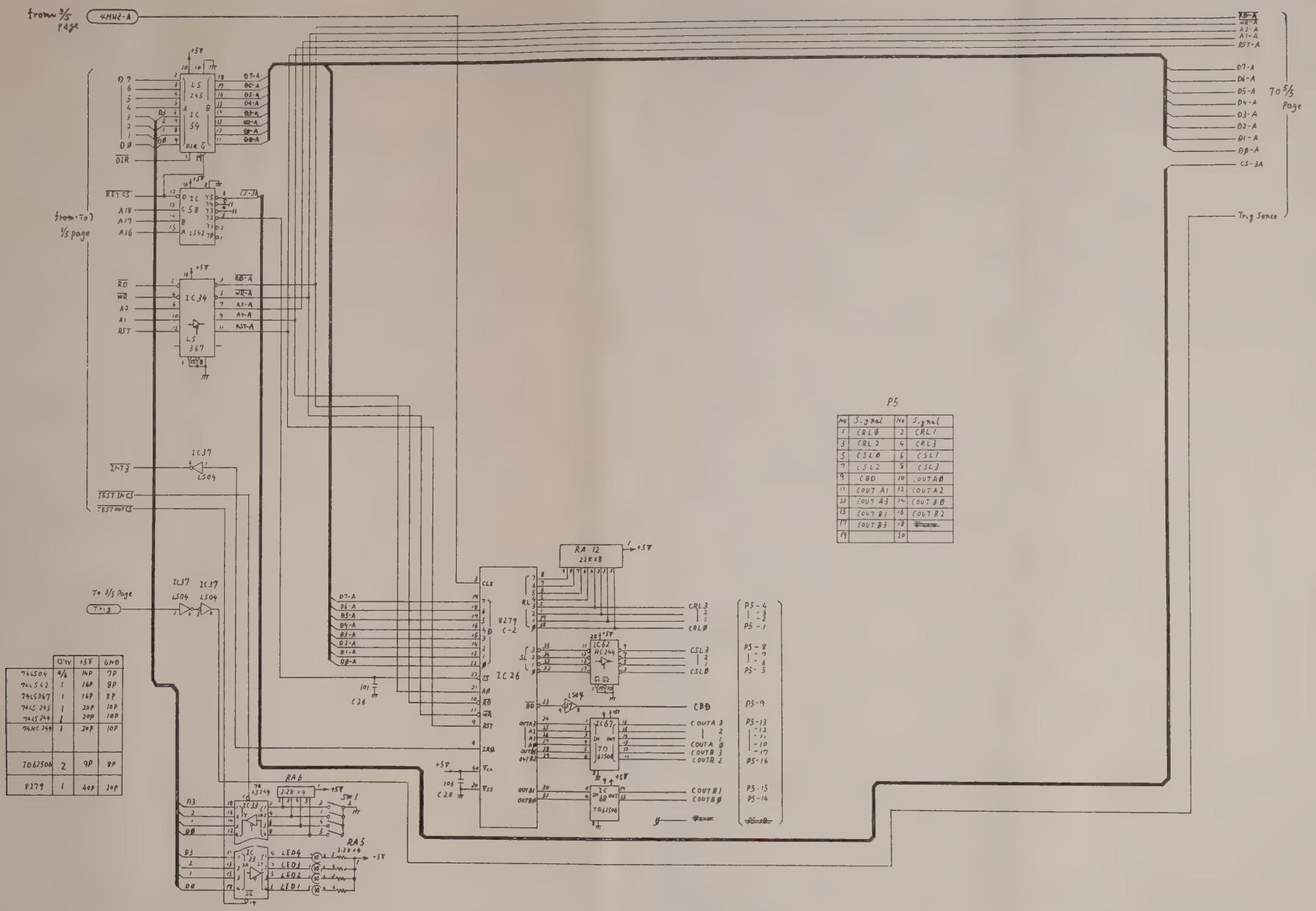
74LS00	3/4	14P	7P
74LS08	1/4	14P	7P



	Q'ty	V_{DD} (+5V)	V_{SS} (GND)
74LS00	1/4	14P	7P
74LS04	2/6	14P	7P
74LS08	1	14P	7P
74LS74	1·½	14P	7P
74HC205	2	20P	10P
MB81256 (ZIP-16P)	16	12P	4P
MB4464 (DIP-28P)	2	28P	14P
MB1422	1	32P	11P



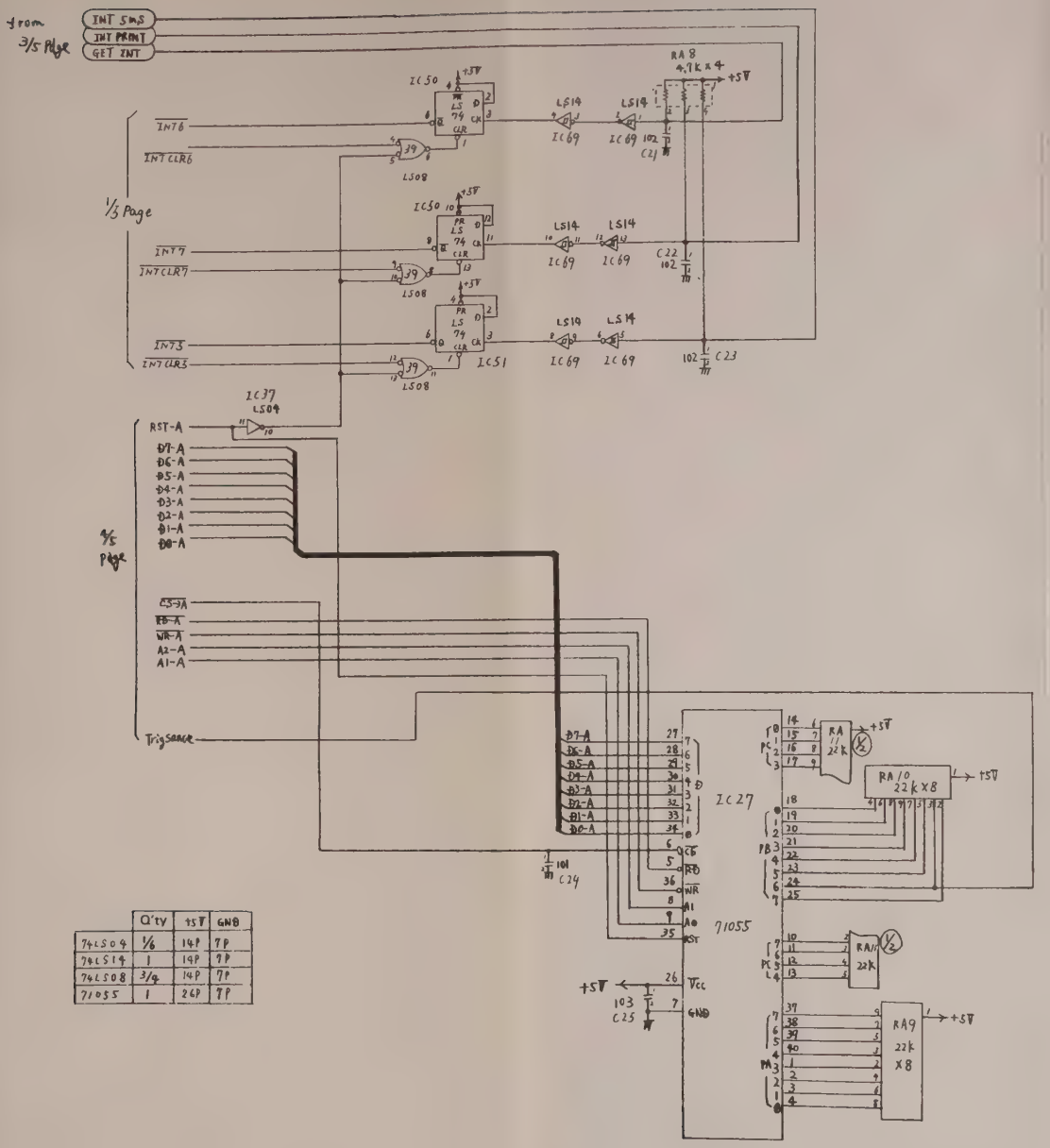
	Q'ty	+5V	GND
7406	1/6	14P	7P
7414	1/6	14P	7P
74HC244	3	20P	10P
74HC245	2	20P	10P
74HC42	3	16P	8P



P5

No	Signal	No	Signal
1	CRL0	2	CRL1
3	CRL2	4	CRL3
5	CSL0	6	CSL1
7	CSL2	8	CSL3
9	CBD	10	COUTA0
11	COUTA1	12	COUTA2
13	COUTA3	14	COUTB0
15	COUTB1	16	COUTB2
17	COUTB3	18	~~P5-18~~
19		20	

	Q'ty	+5V	GND
74LS04	4/6	14P	7P
74LS42	1	16P	8P
74LS367	1	16P	8P
74LS 245	1	20P	10P
74LS 249	1	20P	10P
74HC 244	1	20P	10P
TD62506	2	9P	8P
8279	1	40P	20P



	Q'ty	+5V	GND
74LS04	1/6	14P	7P
74LS14	1	14P	7P
74LS08	3/4	14P	7P
71055	1	26P	7P

Slave CPU (1/3)

Figure	Part No.	Description	Type	Remarks
IC1	503304068	IC, CMOS CPU	MC68000P12	
IC2, 3	503304043	IC, EPROM	MBM27C512-25	
IC4, 5	503304044	IC, Static RAM	MBM8425610LPG	
IC6, 7	503304045	IC, Static RAM	MB8464A10LPSK	
IC8	503304047	IC, Bipolar Dynamic RAM Controller	MB1422AP	
IC9 ~ 24	503304048	IC, NMOS 256K-BIT Dynamic RAM	MB81256-12PSZ	
IC26	503303982	IC, NMOS Key & Display Cont.	μPD8279C-12	
IC27	503303935	IC, CMOS P.I.O.	μPD71055C	
IC28	503301188	IC, Reset	PST518A	
IC29, 30	503303784	IC, TTL Hex Inverter	HD7406	
IC31	503304050	IC, TTL Hex Schmitt Inverter	HD7414	
IC32	503303474	IC, TTL Quad 2-Input NAND Gate	M74LS00	
IC33	503303872	IC, TTL Octal Bus Buffer	M74LS244	
IC34	503303956	IC, TTL Hex Bus Buffer	M74LS367	
IC35~37	503303471	IC, TTL Hex Inverters	M74LS04	
IC38, 39	503301185	IC, TTL Quad 2-Input AND Gate	M74LS08	
IC40	503303867	IC, TTL Triple 3-Input NAND Gate	M74LS10	
IC41	503304028	IC, TTL 8-Input NOR Gate	M74LS30	
IC42~44	503303855	IC, TTL Quad 2-Input OR Gate	M74LS32	
IC45	503303186	IC, TTL BCD To Decimal Decoder	M74LS42	
IC46	503303803	IC, CMOS BCD To Decimal Decoder	M74HC42	
IC47~51	503303470	IC, TTL Dual Type D Flip Flop	M74LS74	
IC52	503304051	IC, TTL 8 To 3 Line Priority Encoder	M74LS148	
IC53	503304052	IC, TTL 4 To 16 Line Decoder	M74154	
IC54	503303925	IC, TTL Octal Bus Transceiver	M74LS245	
IC55	503303887	IC, CMOS Hex Schmitt Inverter	TC74HC14	
IC56, 57	503303803	IC, CMOS BCD To Decimal Decoder	TC74HC42	
IC58	503303186	IC, TTL BCD To Decimal Decoder	M74LS42	
IC59~62	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC63~66	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245	
IC67, 68	503303838	IC, Transistor Array	TD62506	
IC69	503301184	IC, TTL Hex Schmitt Inverter	M74LS14	
CR1	503100020	Di, Si V_R = 30V I_F = 100mA	1S953	
Q1	503203019	T, PNP −50V −2A 900mA	2SA1020, Y	
Q2	503203014	T, NPN 30V 100mA 200mA	2SC1815, Y,	
R1	501810233	R, Metal Film 330 1/4W ±1%	RN1/4-330F	
R2	501810510	R, " 100K " "	RN1/4-100KF	
R3	501810268	R, " 680 " "	RN1/4-680F	
R4	501810147	R, " 47 " "	RN1/4-47F	
R5	501810422	R, " 22K " "	RN1/4-22KF	
R6	501810347	R, " 4.7K " "	RN1/4-4.7KF	
R7	501810222	R, " 220 " "	RN1/4-220F	

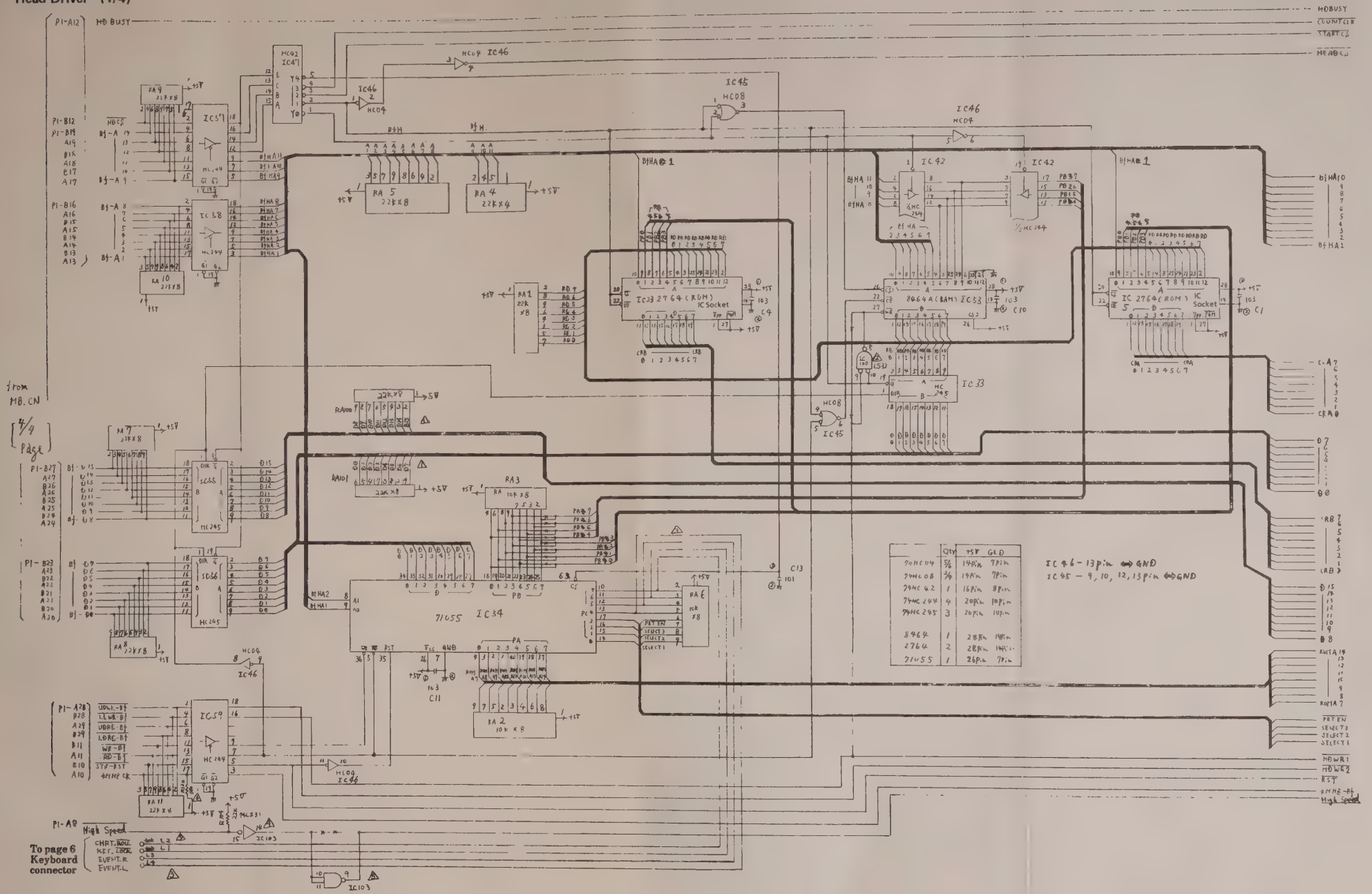
Slave CPU (2/3)

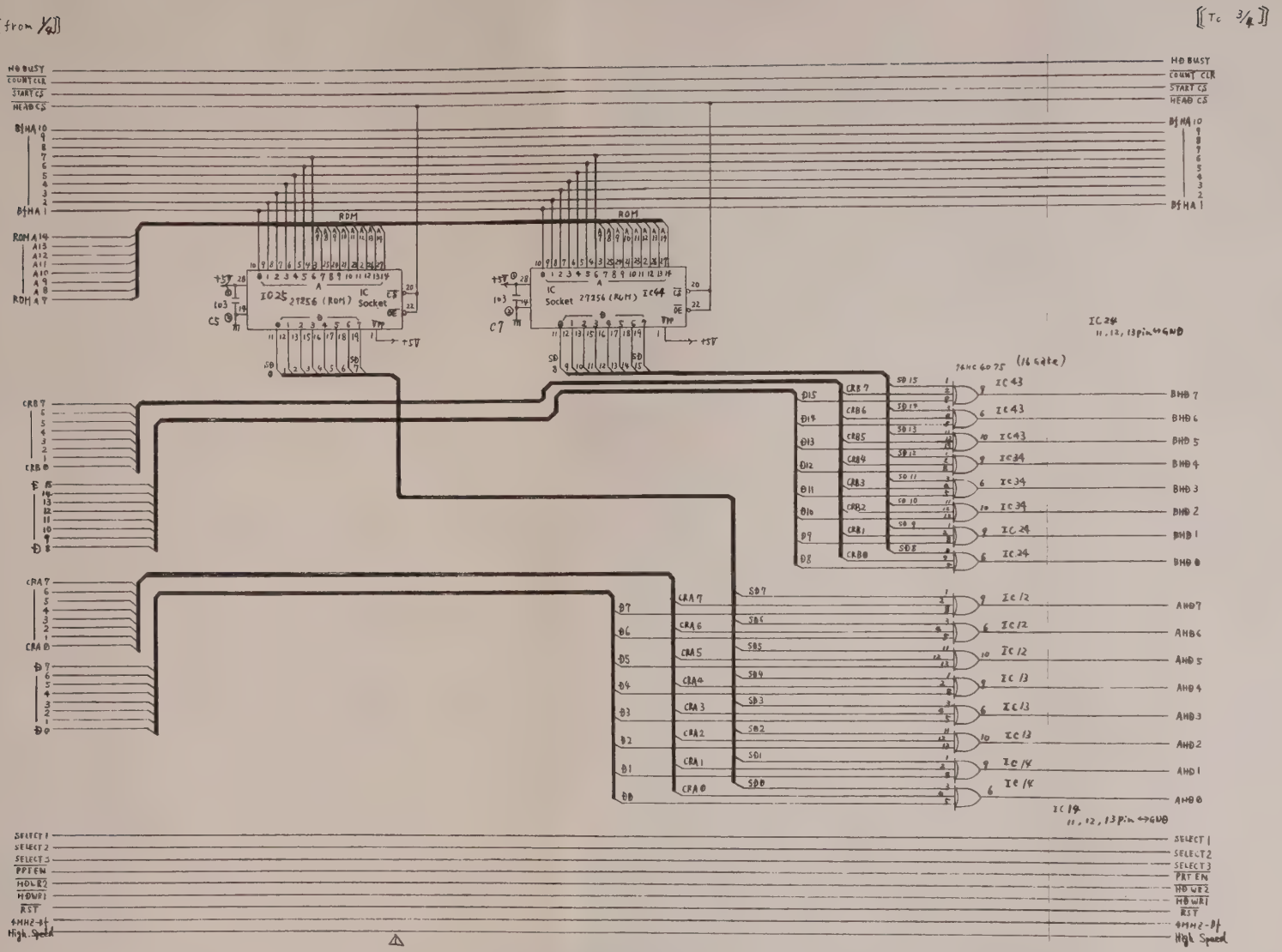
Figure	Part No.	Description				Type	Remarks
R8	501810310	R, Metal Film	1K	1/4W	±1%	RN1/4-1KF	
R9	501810410	R, "	10K	"	"	RN1/4-10KF	
R10	501810233	R, "	330	"	"	RN1/4-330F	
RA1 ~ 3	501003445	Resistor Array	33		±5%	EXBF8V-330J	
RA4	501003424	"	330		"	EXBF5E-331J	
RA5 ~ 7	501002812	"	2.2K		"	EXBF5E-222J	
RA8	501003327	"	4.7K		"	EXBF5E-472J	
RA9~12	501002831	"	22K		"	EXBF9E-223J	
RA13	501003327	"	4.7K		"	EXBF5E-472J	
RA14	501003305	"	"		"	EXBF9E-472J	
RA15	501002813	"	10K		"	EXBF9E-103J	
RA16, 17	501003305	"	4.7K		"	EXBF9E-472J	
C1, 2	502403007	C, Ceramic	0.01μF	50WV		ROU06F103Z-L45AC	
C3	502103190	C, Electrolytic	10μF	16WV		ECEA1CGE100	
C4 ~ 11	502403007	C, Ceramic	0.01μF	50WV		ROU06F103Z-L45AC	
C14 ~ 18	"	C, "	"	"		"	
C19	502103187	C, Electrolytic	470μF	10WV		ECEA1AGE471	
C20	502403007	C, Ceramic	0.01μF	50WV		ROU06F103Z-L45AC	
C21 ~ 23	502403015	C, "	0.001μF	"		ROU05B102K-L05AC	
C24	502703001	C, Mica	100pF	100WV		Z08-100V100K	
C25	502403007	C, Ceramic	0.01μF	50WV		ROU06F103Z-L45AC	
C26	502703001	C, Mica	100pF	100WV		Z08-100V100K	
C27	502103177	C, Electrolytic	100μF	10WV		ECEA1AGE101	
C28	502403007	C, Ceramic	0.01μF	50WV		ROU06F103Z-L45AC	
X1	503304049	IC, Clock Generator		25MHz		KXO-01 25MHz	
L1	501810008	Coil				SN-85-500	
TP2	513400027	Test Pin				LC-1-G	
TP3-1	"	"				"	
TP4-1	"	"				"	
TP5, 6	"	"				"	
TP100-1	"	"				"	
TP101-1	"	"				"	
TP102-1	"	"				"	
TP103-1	"	"				"	
IC2,3,4,5	513400119	IC Socket				228-AG29D	
P1	513500503	Connector	90 pin			8341-090-294	
P2	513500504	"	32 pin			8341-032-294	
P5	513500501	"	20 pin			FCN-745Q020-AU10	

Slave CPU (3/3)

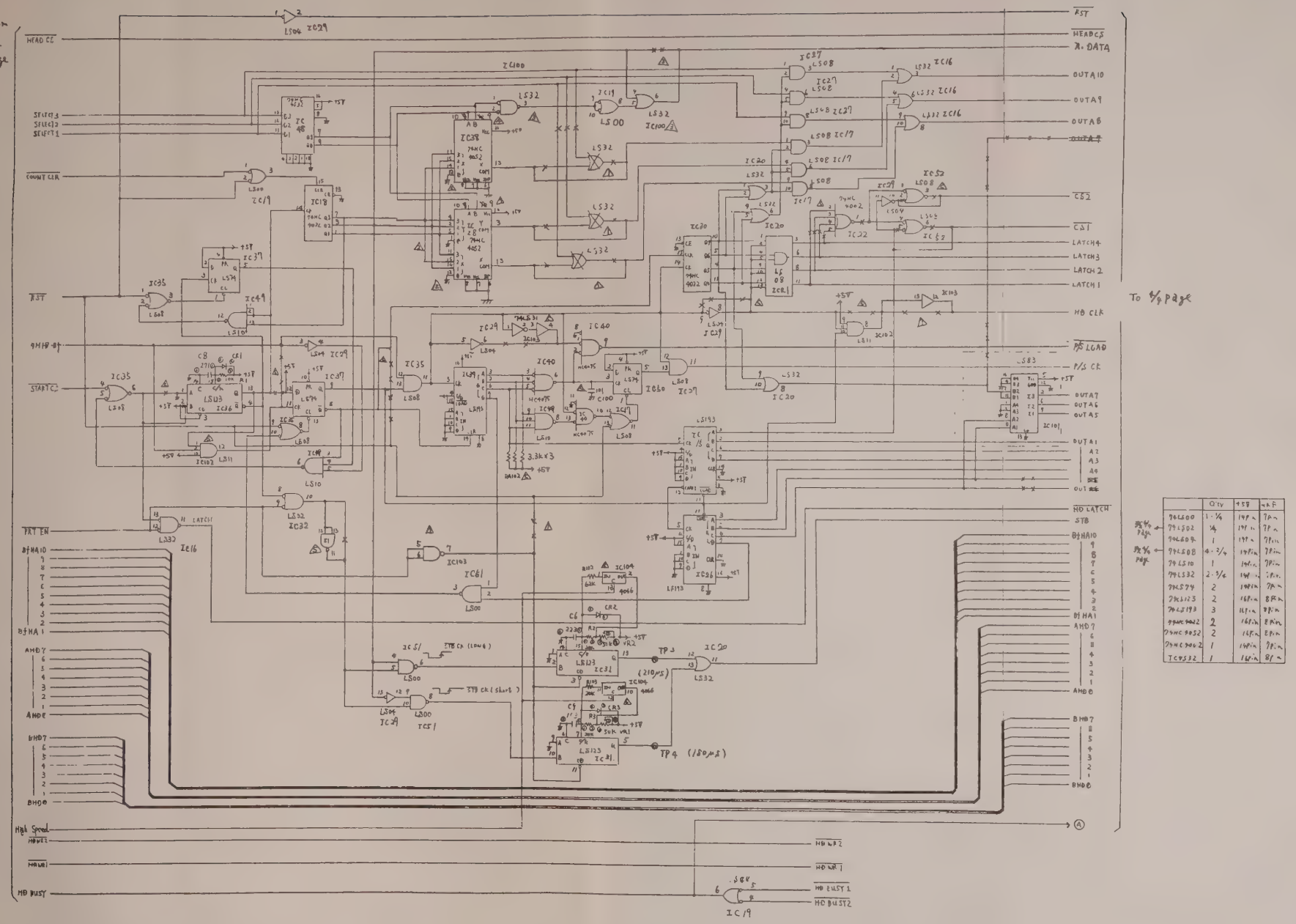
Figure	Part No.	Description	Type	Remarks
P.C.B.	213600102	Printed Circuit Board	PR3600-102	
	520100036		CBI Ejector CBE-12	
	513200203	Connector Receptacle 2 pin	1625-2R-1	
	513400022	Contact Pin	1561TL	

Head Driver (1/4)

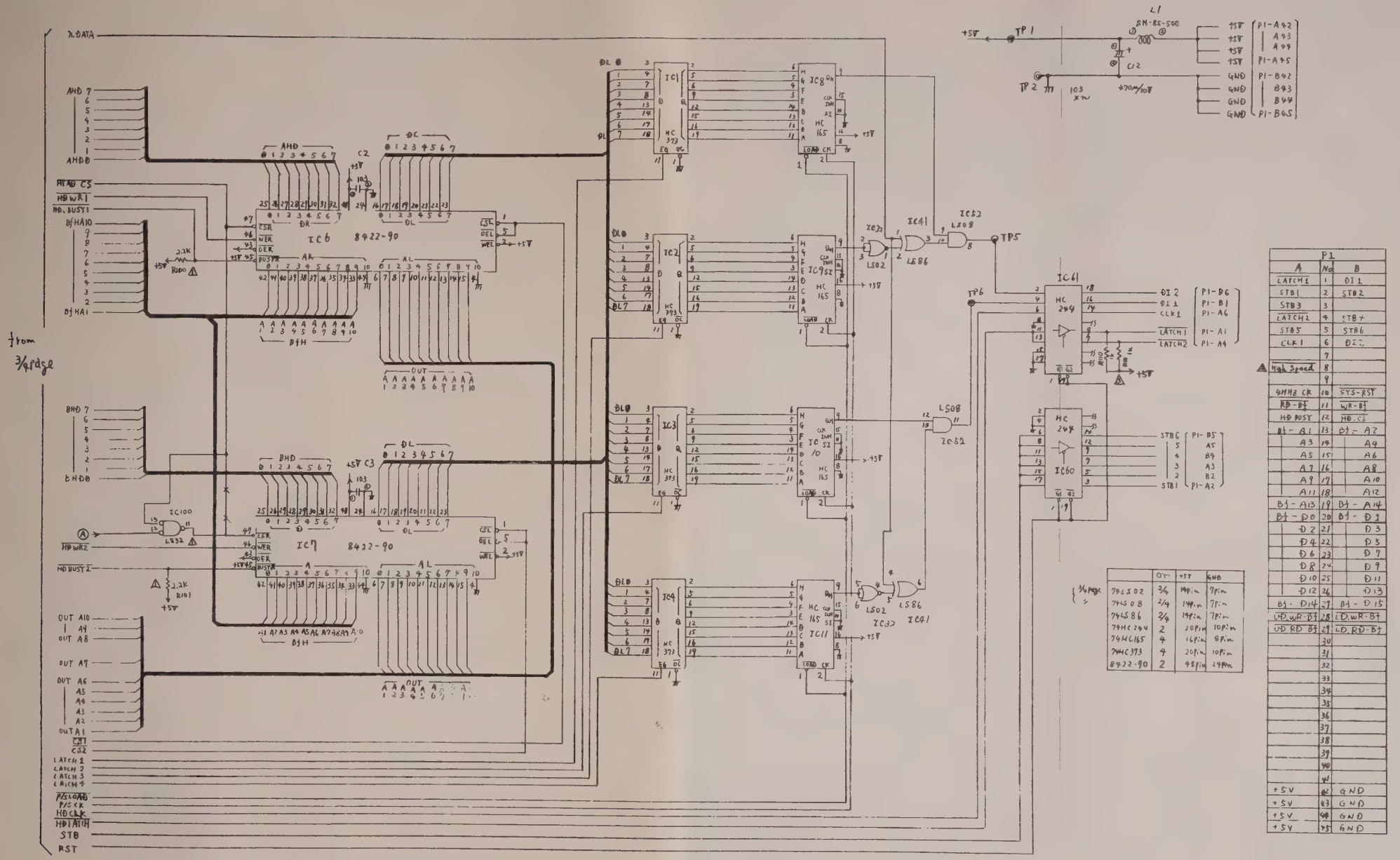




	Q'ty	+5V	GND
74HC 4075	6	14Pin	7Pin
27256	2	28Pin	14Pin



	Qty	+5V	mA
74LS00	1·1/4	19	7
74LS02	1/4	19	7
74LS08	1	19	7
74LS08	4·3/4	19	7
74LS10	1	19	7
74LS32	2·3/4	19	7
74LS74	2	16	8
74LS123	2	16	8
74LS193	3	11	9
74HC4002	2	16	8
74HC4052	2	16	8
74HC4002	1	16	8
TC4532	1	16	8



P1		
A	No	B
LATCH1	1	DI 1
STB1	2	STB2
STB3	3	
LATCH2	4	STB4
STB5	5	STB6
CLK1	6	DI2
	7	
High Speed	8	
	9	
4MHz CK	10	SYS-RST
RD-B1	11	WR-B1
HD BUSY	12	HD CS
B1-A1	13	B1-A2
A3	14	A4
A5	15	A6
A7	16	A8
A9	17	A10
A11	18	A12
B1-A13	19	B1-A14
B1-D0	20	B1-D1
D2	21	D3
D4	22	D5
D6	23	D7
D8	24	D9
D10	25	D11
D12	26	D13
B1-D14	27	B1-D15
UD.WR-B1	28	LD.WR-B1
UD.RD-B1	29	LD.RD-B1
	30	
	31	
	32	
	33	
	34	
	35	
	36	
	37	
	38	
	39	
	40	
	41	
+5V	42	GND
+5V	43	GND
+5V	44	GND
+5V	45	GND

	Q'ty	+5V	GND
74LS02	3/4	14Pin	7Pin
74LS08	2/4	14Pin	7Pin
74LS86	3/4	14Pin	7Pin
74HC244	2	20Pin	10Pin
74HC165	4	16Pin	8Pin
74HC373	4	20Pin	10Pin
8422-90	2	48Pin	24Pin

Head Driver (1/3)

Figure	Part No.	Description	Type	Remarks
IC1~4	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC5	503304053	IC, NMOS 64k-BIT EPROM	MBM2764-25	
IC6, 7	503304046	IC, CMOS 16k-BIT Dual Port STATIC RAM	MB8422-90LP	
IC8~11	503304059	IC, CMOS 8Bit PISO SHIFT Register	TC74HC165	
IC12~14	503304009	IC, CMOS Triple 3-Input OR Gate	TC74HC4075	
IC15	503304057	IC, TTL Sync Up/Down Binary Counter	M74LS193	
IC16	503303855	IC, TTL Quad 2-Input OR Gate	M74LS32	
IC17	503301185	IC, TTL Quad 2-Input AND Gate	M74LS08	
IC18	503304056	IC, CMOS Octal Counter/Divider	TC74HC4022	
IC19	503303474	IC, TTL Quad 2-IN NAND	M74LS00	
IC20	503303855	IC, TTL Quad 2-Input OR Gate	M74LS32	
IC21	503301185	IC, TTL Quad 2-Input AND Gate	M74LS08	
IC23	503304053	IC, NMOS 64k-BIT EPROM	MBM2764-25	
IC24	503304009	IC, CMOS Triple 3-Input OR Gate	TC74HC4075	
IC25	503304058	IC, NMOS 256k-BIT EPROM	MBM27256-20	
IC26	503304057	IC, TTL Sync Up/Down Binary Counter	M74LS193	
IC27	503301185	IC, TTL Quad 2-Input AND Gate	M74LS08	
IC28	503304055	IC, CMOS Dual 4-Channel Analog Multiplexer	TC74HC4052	
IC29	503303471	IC, TTL Hex Inverters	M74LS04	
IC30	503304056	IC, CMOS Octal Counter/Divider	TC74HC4022	
IC31	503301186	IC, TTL Dual Monostable Multivibrator	M74LS123	
IC32	503303788	IC, TTL Quad 2-IN NOR	M74LS02	
IC33	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245	
IC34	503304009	IC, CMOS Triple 3-Input OR Gate	TC74HC4075	
IC35	503301185	IC, TTL Quad 2-Input AND Gate	M74LS08	
IC36	503301186	IC, TTL Dual Monostable Multivibrator	M74LS123	
IC37	503303470	IC, TTL Dual D-F-F with Preset & Clear	M74LS74	
IC38	503304055	IC, CMOS Dual 4-Channel Analog Multiplexer	TC74HC4052	
IC39	503304057	IC, TTL Sync Up/Down Binary Counter	M74LS193	
IC40	503304009	IC, CMOS Triple 3-Input OR Gate	TC74HC4075	
IC41	503303950	IC, TTL Quad EX-OR	M74LS86	
IC42	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC43	503304009	IC, CMOS Triple 3-Input OR Gate	TC74HC4075	
IC44	503304058	IC, NMOS 256k-BIT EPROM	MBM27256-20	
IC45	503301185	IC, TTL Quad 2-Input AND Gate	M74LS08	
IC46	503303889	IC, TTL Hex Inverters	TC74HC04	
IC47	503303803	IC, CMOS BDC to Decimal Decoder	TC74HC42	
IC48	503304054	IC, CMOS Encorder	TC4532	
IC49	503303867	IC, TTL Triple 3-IN NAND	M74LS10	
IC50	503303470	IC, TTL Dual Type D Flip Flop	M74LS74	
IC51	503303474	IC, TTL Quad 2-IN NAND	M74LS00	
IC52	503301185	IC, TTL Quad 2-IN AND	M74LS08	
IC53	503304045	IC, CMOS 64k-BIT STATIC RAM	MB8464A-10LPSK	
IC54	503303935	IC, CMOS P.I.O	μPD71055C	
IC55, 56	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245	

Head Driver (2/3)

Figure	Part No.	Description	Type	Remarks
IC57~61	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC100	503303855	IC, TTL Quad 2-Input OR Gate	M74LS32	
IC101	503304060	IC, TTL 4-BIT Binary Full Adder	M74LS83	
IC102	503303854	IC, TTL Triple 3-IN AND	M74LS11	
IC103	503304061	IC, TTL Delay Element	SN74LS31	
IC104	503300052	IC, CMOS, Analog Switch	TC4066BP	
CR1 ~ 3	503100020	Di, Si V_R = 30V I_F = 100mA	1S953	
R1	501810410	R, Metal Film 10K 1/4W ±1%	RN1/4-10KF	
R2, 3	501810420	R, " 20K " "	RN1/4-20KF	
R100,101	501810322	R, " 2.2K " "	RN1/4-2.2KF	
R102	501810462	R, " 62K " "	RN1/4-62KF	
R103	501810420	R, " 20K " "	RN1/4-20KF	
R104	501810422	R, " 22K " "	RN1/4-22KF	
R110,111	501810310	R, " 1K " "	RN1/4-1KF	
VR1, 2	505103024	R, Trimmer Cermet 50K	GF6X1-50K	
C1 ~ 5	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
C6	502303008	C, Mylar Film 0.022μF "	MFL-05S22	
C7	502403007	C, Ceramic 0.01μF "	ROU06F103Z-L45AC	
C8	502403083	C, " 270pF "	RBU08SL271JL45AC	
C9	502303004	C, Mylar Film 0.01μF "	MFL-05S1	
C11	502403007	C, Ceramic " "	ROU06F103Z-L45AC	
C12	502103187	C, Electrolytic 470μF 10WV	ECEA1AGE471	
C13	502703001	C, Mica 100p 100WV	Z-08-100V100K	
C14 ~ 25	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
C27 ~ 36	"	C, " " "	"	
C100	502403029	C, " 100pF "	RAU04SA101JL05AC	
RA1	501002831	Resistor Array 22K ±5%	EXBF9E-223J	
RA2, 3	501002813	" 10K "	EXBF9E-103J	
RA4	501002832	" 22K "	EXBF5E-223J	
RA5	501002831	" 22K "	EXBF9E-223J	
RA6	501002813	" 10K "	EXBF9E-103J	
RA7~11	501002831	" 22K "	EXBF9E-223J	
RA100, 101	"	" " "	"	
RA102	501003412	" 3.3K "	EXBF5E-332J	
L1	501810008	Coil	SN-8S-500	
P1	513500503	Connector 90 pin	8341-090-294	

Head Driver (3/3)

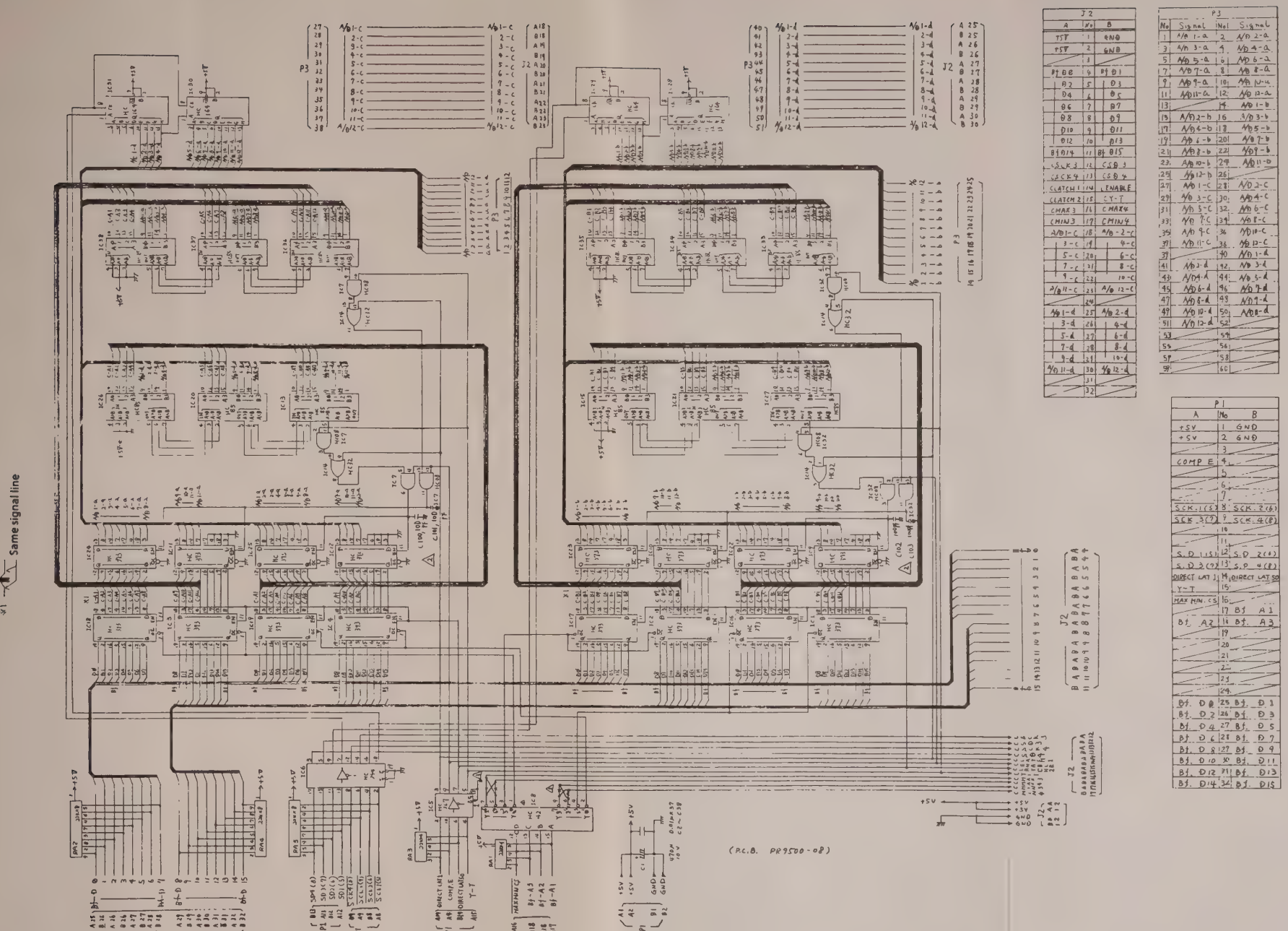
Figure	Part No.	Description	Type	Remarks
TP1 ~ 7	513400027	Test Pin	LC-1-G	
	513400119	IC Socket	228-AG29D	For IC5, 23, 25, 44
PCB	213600030	Printed Circuit Board	PR3600-03A	
	520100036		CB EJECTOR CBE-12	

Master Head Driver (1/1)

Figure	Part No.	Description		Type	Remarks
L1	513200101	Connector	1 pin	1625-1P-1	
L1 ~ 4	513200404	"	4 pin	1625-04R-1	
L1	513400001	Contact Pin		1854TL	
L1 ~ 4	513400002	"		1855TL	

Slave Head Driver (1/1)

Figure	Part No.	Description	Type	Remarks
L1	513200102	Connector 1 pin	1625-1R-1	
L1	513400002	Connect Pin	1855TL	



J2			
A	No	B	
TST	1	GND	
+5T	2	GNB	
	3		
BJ D0	4	BJ D1	
D2	5	D3	
D6	6	D5	
D8	7	D7	
D10	8	D9	
D12	9	D11	
BJ D14	10	BJ D15	
SCK 3	11	SCK 5	
SCCK 4	12	SCK 6	
CLATCH 1	13	ENABLE	
CLATCH 2	14	CY-T	
CMAX 3	15	CMAX4	
CMIN3	16	CMIN4	
A/D1-C	17	A/D-2-C	
3-C	18	4-C	
5-C	19	6-C	
7-C	20	8-C	
9-C	21	10-C	
A/D 11-C	22	A/D 12-C	
	23		
A/D 1-d	24	A/D 2-d	
3-d	25	4-d	
5-d	26	6-d	
7-d	27	8-d	
9-d	28	10-d	
A/D 11-d	29	A/D 12-d	
	30		
	31		
	32		

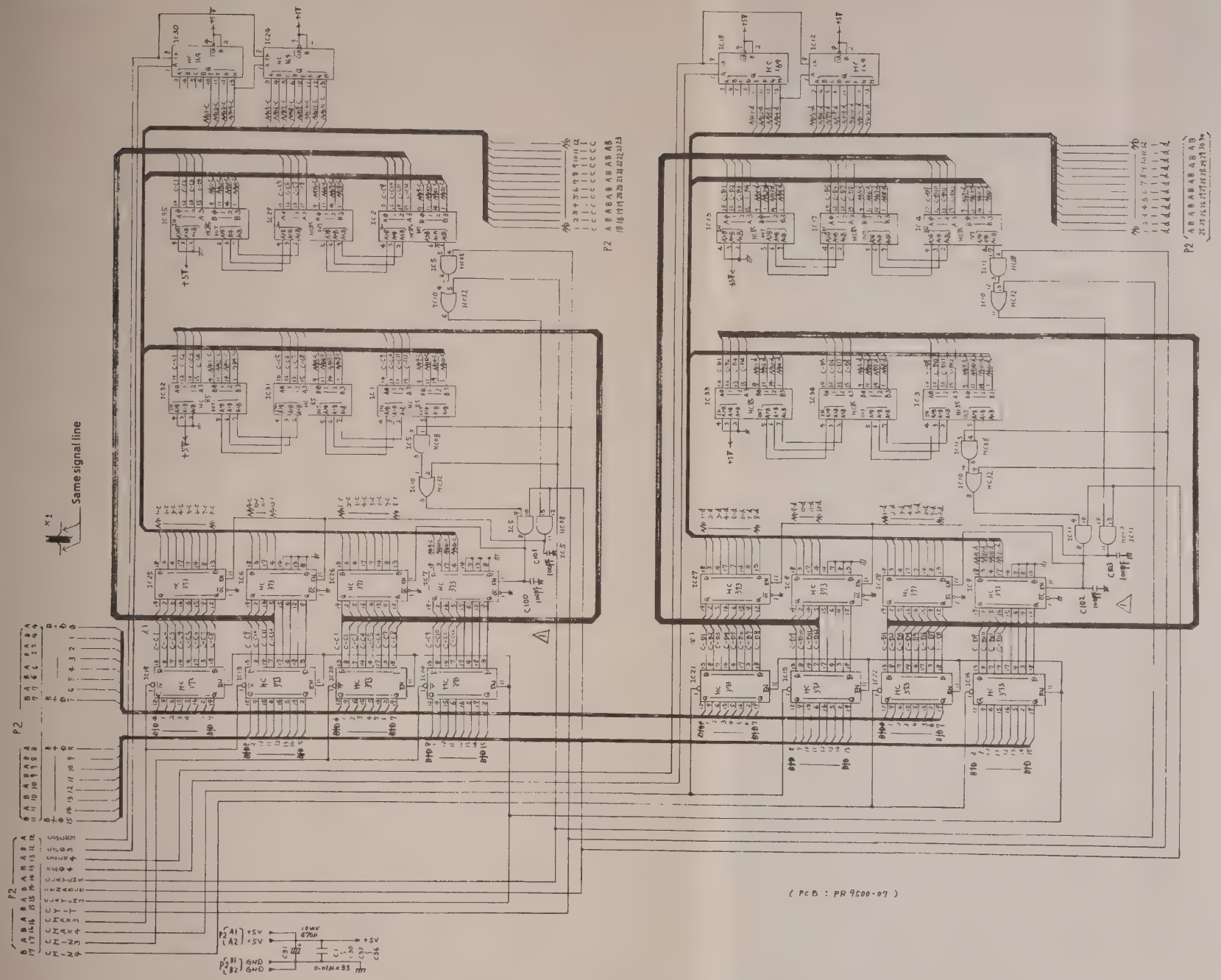
P3			
No	Signal	No	Signal
1	A/D 1-a	2	A/D 2-a
3	A/D 3-a	4	A/D 4-a
5	A/D 5-a	6	A/D 6-a
7	A/D 7-a	8	A/D 8-a
9	A/D 9-a	10	A/D 10-a
11	A/D 11-a	12	A/D 12-a
13		14	A/D 1-b
15	A/D 2-b	16	A/D 3-b
17	A/D 4-b	18	A/D 5-b
19	A/D 6-b	20	A/D 7-b
21	A/D 8-b	22	A/D 9-b
23	A/D 10-b	24	A/D 11-b
25	A/D 12-b	26	
27	A/D 1-C	28	A/D 2-C
29	A/D 3-C	30	A/D 4-C
31	A/D 5-C	32	A/D 6-C
33	A/D 7-C	34	A/D 8-C
35	A/D 9-C	36	A/D 10-C
37	A/D 11-C	38	A/D 12-C
39		40	A/D 1-d
41	A/D 2-d	42	A/D 3-d
43	A/D 4-d	44	A/D 5-d
45	A/D 6-d	46	A/D 7-d
47	A/D 8-d	48	A/D 9-d
49	A/D 10-d	50	A/D 8-d
51	A/D 12-d	52	
53		54	
55		56	
57		58	
59		60	

P1		
A	No	B
+5V	1	GND
+5V	2	GND
	3	
COMP E	4	
	5	
	6	
	7	
SCK.1(5)	8	SCK.2(6)
SCK 3(7)	9	SCK.4(8)
	10	
	11	
S.D 1(5)	12	S.D 2(6)
S.D 3(7)	13	S.D 4(8)
DIRECT LAT 1	14	DIRECT LAT 2
Y-T	15	
MAX MIN. CS	16	
BJ A1	17	BJ A1
BJ A2	18	BJ A3
	19	
	20	
	21	
	22	
	23	
	24	
BJ D0	25	BJ D1
BJ D2	26	BJ D3
BJ D4	27	BJ D5
BJ D6	28	BJ D7
BJ D8	29	BJ D9
BJ D10	30	BJ D11
BJ D12	31	BJ D13
BJ D14	32	BJ D15

Comparator A (1/1)

Figure	Part No.	Description	Type	Remarks
IC1 ~ 4	503303888	IC, CMOS Octal D-Type Latch	TC744HC373	
IC5	503303908	IC, CMOS Hex Bus Buffer	TC74HC367	
IC6	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC7	503303807	IC, CMOS Quad 2-Input AND Gate	TC744HC08	
IC8	503303803	IC, CMOS BCD To Decimal Decoder	TC74HC42	
IC9 ~ 12	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC13	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC14	503303809	IC, CMOS Quad 2-Input OR Gate	TC74HC32	
IC15	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC16~19	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC20, 21	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC22~25	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC26, 27	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC28~31	503303905	IC, CMOS 8-Bit SIPO Shift Register	TC74HC164	
IC32	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
C1	502103191	C, Electrolytic 470μF	ECEB1AAGE471	
C2 ~ 38	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
C100~ 103	502703001	C, Mica 100pF 100WV	Z08-100V100K	
RA1	501003328	Resistor Array 22K	EXBF5E-223J	
RA2	501003340	" "	EXBF9E-223J	
R3	501003328	" "	EXBF5E-223J	
R4, 5	501003340	" "	EXBF9E-223J	
P1	513500505	Connector, Pin Header 64 pin	8341-064-294	
P3	513500506	" , " 60 pin	FCN744Q60AU/0	
J2	513500494	Connector, Receptacle 64 pin	8330-064-283	
P.C.B.	213600080	Printed Circuit Board	PR3600-08	
	307600006		WLS-16.8-0	

Comparator B



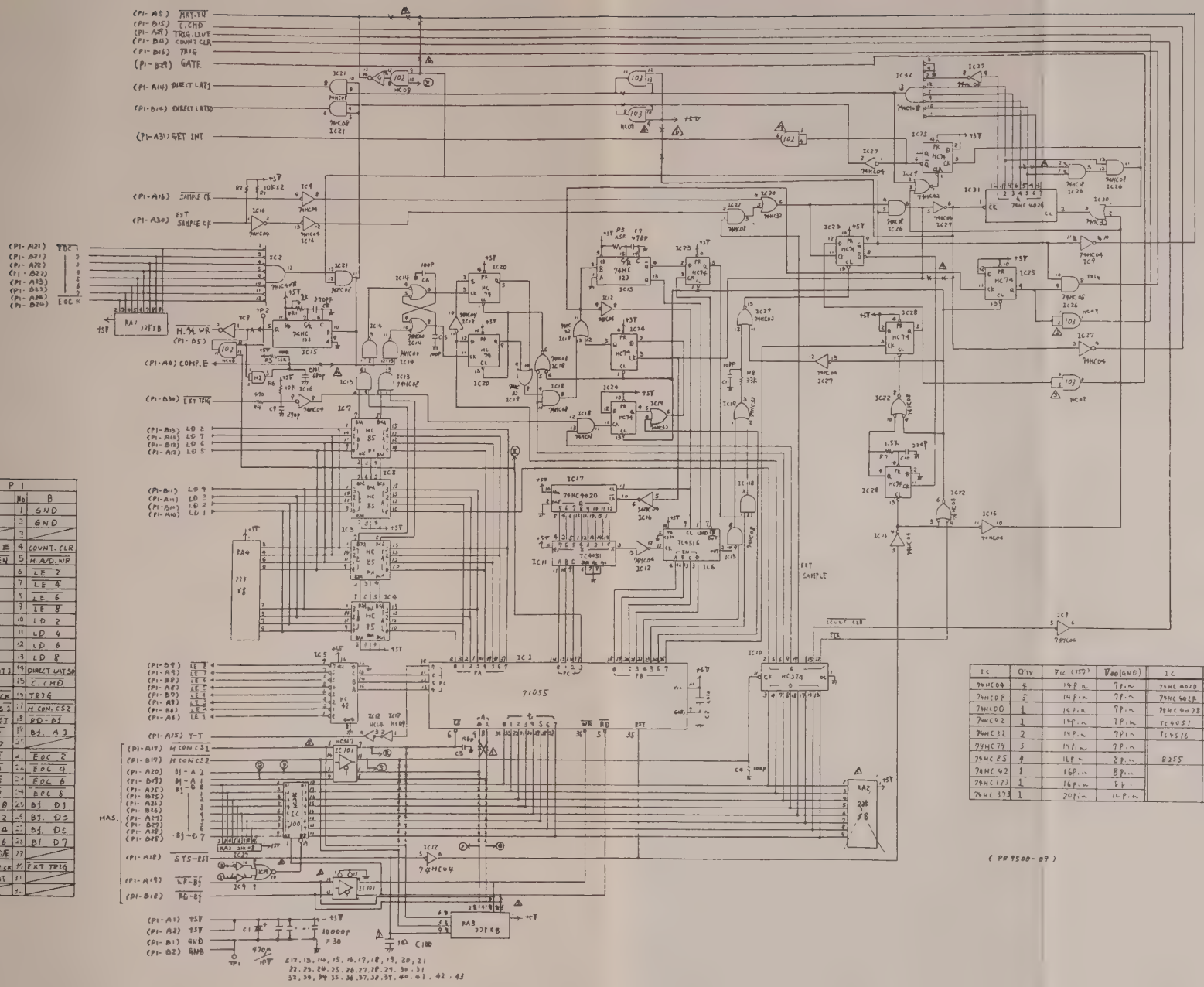
P2			
A			B
+5V	1		GND
+5V	2		GND
	3		
D0	4		D1
D2	5		D3
D4	6		D5
D6	7		D7
D8	8		D9
D10	9		D11
D12	10		D13
D14	11		D15
CSD3	12		CSD4
CSCLK3	13		CSCLK4
CLATCH1	14		CENABLE
CLATCH2	15		CT-T
CMAX3	16		CMAX4
CMIN3	17		CMIN4
A/D 1-C	18		A/D 2-C
3-C	19		4-C
5-C	20		6-C
7-C	21		8-C
9-C	22		10-C
A/D 11-C	23		A/D 12-C
	24		
A/D 1-A	25		A/D 2-A
3-A	26		4-A
5-A	27		6-A
7-A	28		8-A
9-A	29		10-A
A/D 11-A	30		A/D 12-A
	31		
	32		

IC			
Name	Q'ty	V_{CC}(15V)	V_{DD}(GND)
74HC 08	4	14pin	7pin
74HC 42	1	16pin	8pin
74HC 85	24	16pin	8pin
74HC 164	8	14pin	7pin
74HC 244	1	20pin	10pin
74HC 367	1	16pin	8pin
74HC 373	32	20pin	10pin
MHC 4075	3	14pin	7pin

(PCB : PR9500-07)

Comparator B (1/1)

Figure	Part No.	Description	Type	Remarks
IC1 ~ 4	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC5	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
IC6 ~ 9	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC10	503303809	IC, CMOS Quad 2-Input OR Gate	TC74HC32	
IC11	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
IC12	503303905	IC, CMOS 8-Bit SIPO Shift Register	TC74HC164	
IC13~16	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC17	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC18	503303905	IC, CMOS 8-Bit SIPO Shift Register	TC74HC164	
IC19~22	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC23	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC24	503303905	IC, CMOS 8-Bit SIPO Shift Register	TC74HC164	
IC25~28	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC29	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC30	503303905	IC, CMOS 8-Bit SIPO Shift Register	TC74HC164	
IC31~35	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
C1 ~ 30	502403007	C, Ceramic 0.01 F 50WV	ROU06F103Z-L45AC	
C31	502103191	C, Electrolytic 470 F 10WV	ECEB1AGE471	
C32~36	502403007	C, Ceramic 0.01 F 50WV	ROU06F103Z-L45AC	
C100~103	502703001	C, Mica 100pF 100WV	Z08-100V100K	
P2	513500507	Connector 64 pin	8431-064-294	
P.C.B.	213600070	Printed Circuit Board	3600-07	



P1		
A	No	B
+5V	1	GND
+5V	2	GND
	3	
COMP. E	4	COUNT. CLR
MRY. EN	5	M.A.D.WR
LE 1	6	LE 2
LE 3	7	LE 4
LE 5	8	LE 6
LE 7	9	LE 8
LD 1	10	LD 2
LD 3	11	LD 4
LD 5	12	LD 6
LD 7	13	LD 8
DIRECT LAT 1	14	DIRECT LAT 50
Y-T	15	C. CMD
SAMPLE CK	16	TRIG
M.CON CS 1	17	M CON. CS 2
SYS. RST	18	RD-BJ
WR BJ	19	BJ. A 1
BJ. A2	20	
EOC 1	21	EOC 2
EOC 3	22	EOC 4
EOC 5	23	EOC 6
EOC 7	24	EOC 8
BJ. D0	25	BJ. D1
BJ. D2	26	BJ. D3
BJ. D4	27	BJ. D5
BJ D6	28	BJ. D7
TRIG.LIVE	29	
EXT SAMPLE CK	30	EXT TRIG
GET INT	31	
	32	

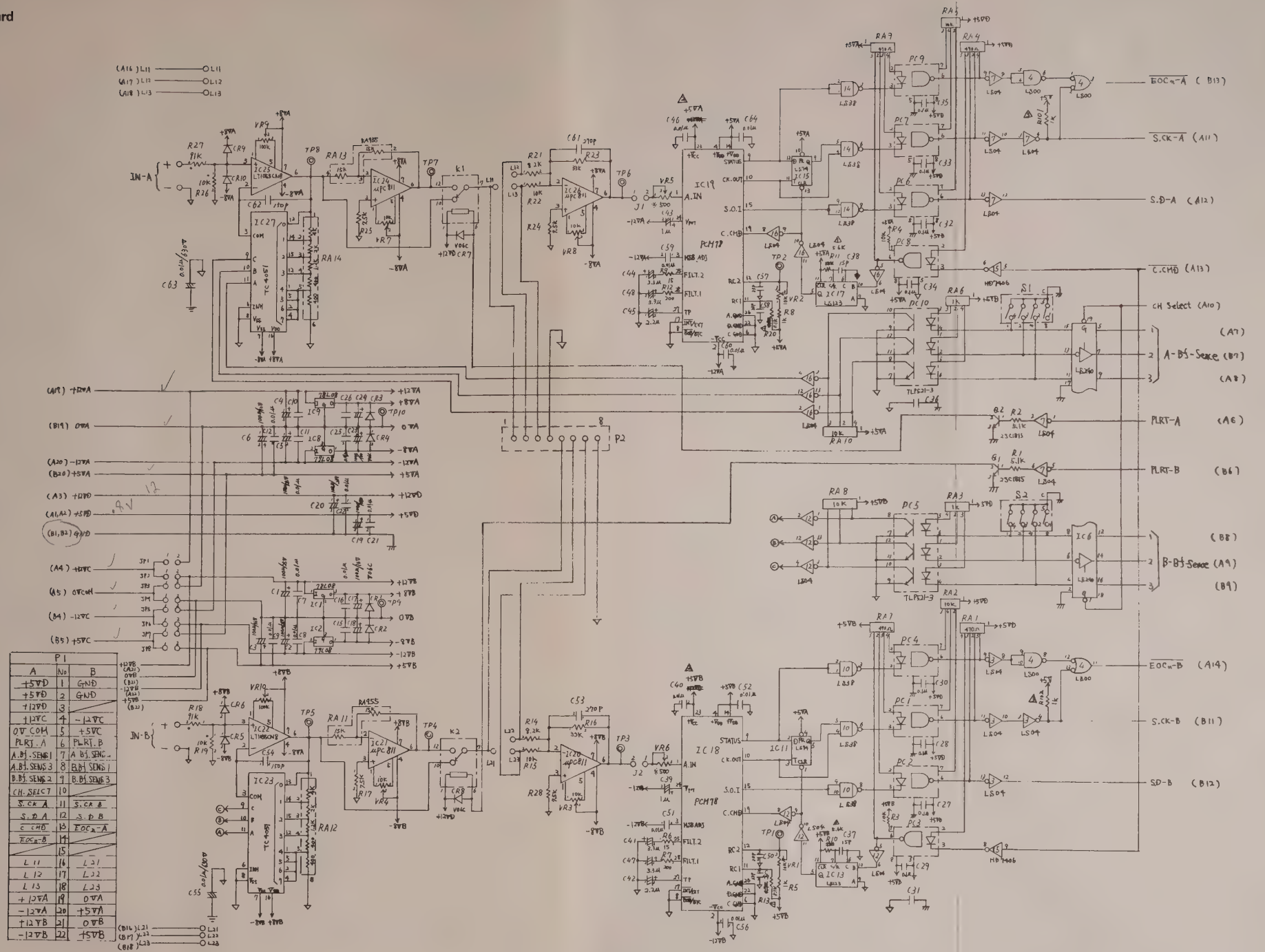
IC	Q'ty	P_{IC} (TYP)	V_{DD}(GND)	IC	Q'ty	V_{CC}(+5V)	V_{DD}(+5V)
74HC04	4	14P.in	7P.in	74HC4020	1	16P.in	8P.in
74HC08	5	14P.in	7P.in	74HC40Z8	1	14P.in	7P.in
74HC00	1	14P.in	7P.in	74HC4078	2	14P.in	7P.in
74HC02	1	14P.in	7P.in	TC4051	1	16P.in	8P.in
74HC32	2	14P.in	7P.in	TC4516	1	16P.in	8P.in
74HC74	5	14P.in	7P.in				
74HC85	4	16P.in	8P.in	8255	1	26P.in	7P.in
74HC42	1	16P.in	8P.in				
74HC123	1	16P.in	8P.in				
74HC373	1	20P.in	10P.in				

Memory Control (1/2)

Figure	Part No.	Description	Type	Remarks
IC1	503303935	IC, CMOS P.I.O.	UPD71055C	
IC2	503304011	IC, CMOS 8-Input OR/NOR Gate	TC74HC4078	
IC3, 4	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC5	503303803	IC, CMOS BCD to Decimal Decoder	TC74HC42	
IC6	503301014	IC, CMOS BINARY UP/DOWN COUNTER	TC4516BP	
IC7, 8	503303808	IC, CMOS 4-Bit Magnitude Comparator	TC74HC85	
IC9	503303889	IC, CMOS Hex Inverter	TC74HC04P	
IC10	503303890	IC, CMOS Octal D-Type Flip-Flop	TC74HC374P	
IC11	503300113	IC, CMOS 8ch, Multiplexer	TC4051BP	
IC12	503303887	IC, CMOS Hex Schmitt Inverter	TC74HC14P	
IC13	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
IC14	503303892	IC, CMOS Quad 2-Input NAND Gate	TC74HC00P	
IC15	503303901	IC, CMOS Dual Monostable Multivibrator	TC74HC123P	
IC16	503303889	IC, CMOS Hex Inverter	TC74HC04P	
IC17	503303902	IC, CMOS 14-Stage Binary Counter	TC74HC4020P	
IC18	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
IC19	503303809	IC, CMOS Quad 2-Input OR Gate	TC74HC32	
IC20	503303891	IC, CMOS Dual D Flip-Flop with Preset & Clear	TC74HC74P	
IC21, 22	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
IC23~25	503303891	IC, CMOS Dual D Flip-Flop with Preset & Clear	TC74HC74P	
IC26	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
IC27	503303889	IC, CMOS Hex Inverter	TC74HC04P	
IC28	503303891	IC, CMOS Dual D Flip-Flop with Preset & Clear	TC74HC74P	
IC29	503303931	IC, CMOS Quad 2-Input NOR Gate	TC74HC02	
IC30	503303809	IC, CMOS Quad 2-Input OR Gate	TC74HC32	
IC31	503303903	IC, CMOS 7-Stage Binary Counter	TC74HC4024P	
IC32	503304011	IC, CMOS 8-Input OR/NOR Gate	TC74HC4078	
IC100	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245P	
IC101	503303908	IC, CMOS Hex Bus Buffer	TC74HC367P	
IC102, 103	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
R1 ~ 3	501810410	R, Metal Film 10K 1/4W ±1%	RN1/4-10KF	
R4	501810247	R, " 470 " "	RN1/4-470F	
R5	501810315	R, " 1.5K " "	RN1/4-1.5KF	
R6	501810410	R, " 10K " "	RN1/4-10KF	
R7	501810315	R, " 1.5K " "	RN1/4-1.5KF	
R8	501810433	R, " 33K " "	RN1/4-33KF	
R100	501810316	R, " 1.6K " "	RN1/4-1.6KF	
VR1	505103009	R, Trimmer 2K	GF06X1-2K	
C1	502103187	C, Electrolytic 470μF	ECEA1AGE471	
C2	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
C3 ~ 6	502403009	C, " 100pF "	ROU04B101Z-L05AC	

Memory Control (2/2)

Figure	Part No	Description			Type	Remarks
C7	502403003	C, Ceramic	470μF	50WV	ROU04B471K-L05AC	
C8, 9	502403083	C, "	270pF	"	RBU08SL271JL45AC	
C10	502403035	C, "	220pF	"	RAU05A221JL05AC	
C11	502403009	C, "	100pF	"	ROU04B101K-L05AC	
C12 ~ 43	502403007	C, "	0.01μF	"	ROU06F103Z-L45AC	
C101	502403036	C, "	680pF	"	RAU08SA681JL45AC	
RA1 ~ 4	501003340	Resistor Array	22K	±5%	EXBF9E-223J	
TP1, 2	513400027	Test Pin			LC-1-G	
P1	513500508	Connector	64 pin		8331-064-294	
P.C.B.	213600090	Printed Circuit Board			PR3600-09A	


P1
A | No | B
+5VD | 1 | GND
+5VD | 2 | GND
+12VD | 3 |
+12VC | 4 | -12VC
0V COM | 5 | +5VC
PLRT. A | 6 | PLRT. B
A.B.SENS 1 | 7 | A B.S. SENS 1
A.B.SENS 3 | 8 | B.B.S SENS 1
B.B.SENS 2 | 9 | B.B.S SENS 3
CH. SELECT | 10 |
S.CK A | 11 | S.CK B
S.D A | 12 | S.D B
C CMD | 13 | EOC A
EOC B | 14 |
| 15 |
L11 | 16 | L31
L12 | 17 | L32
L13 | 18 | L33
+12VA | 19 | 0VA
-12VA | 20 | +5VA
+12VB | 21 | 0VB
-12VB | 22 | +5VB
IN-A
IN-B
A.IN
S.O.I
C.CMD
STATUS
CK.OUT
PCM78
A-B.S-Sence
B-B.S-Sence
CH Select
PLRT-A
PLRT-B
S.CK-A
S.CK-B
S.D-A
S.D-B
EOC-A
EOC-B
P1
P2
J1
J2

A/D Board (1/3)

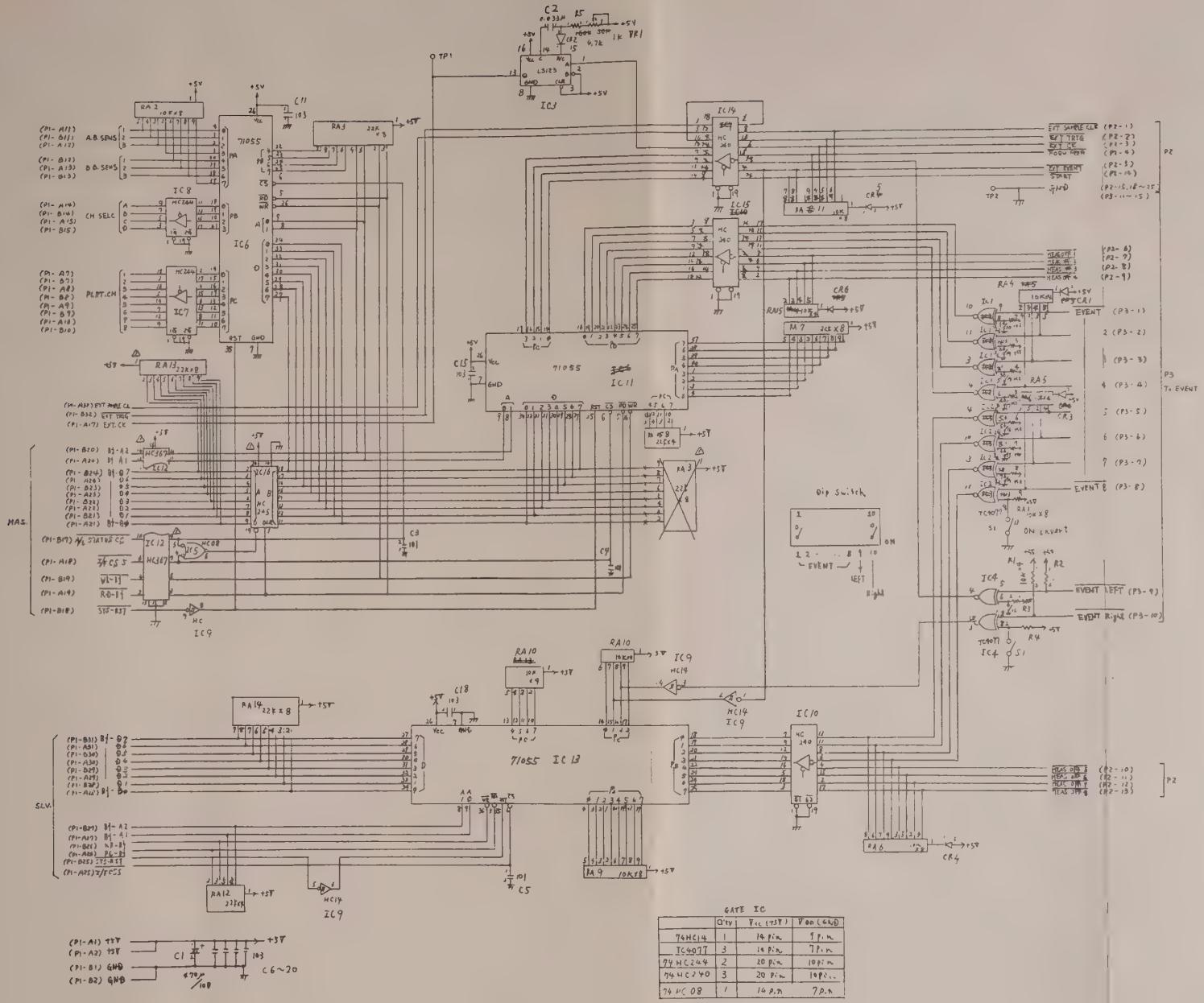
Figure	Part No.	Description	Type	Remarks
IC1	503303822	IC, Voltage Regulator 8V	AN78L08	
IC2	503303427	IC, " −8V	AN79L08	
IC3	503303832	IC, TTL Hex Inverter	74LS04	
IC4	503303474	IC, TTL Quad 2-Input NAND Gate	74LS00	
IC5	503303784	IC, TTL Hex Inverter	HD7406	
IC6	503303870	IC, TTL Octal Bus Buffer (Inverting)	74LS240	
IC7	503303832	IC, TTL Hex Inverter	74LS04	
IC8	503303427	IC, Voltage Regulator −8V	AN79L08	
IC9	503303822	IC, " 8V	AN78L08	
IC10	503304063	IC, TTL Quadruple 2-Input NAND GATE	74LS38	
IC11	503303470	IC, TTL Dual D-Type Flip-Flop	74LS74	
IC12	503303832	IC, TTL Hex Inverter	74LS04	
IC13	503303211	IC, TTL Dual Monostable Multivibrator	74LS123	
IC14	503304063	IC, TTL Quadruple 2-Input NAND GATE	74LS38	
IC15	503303470	IC, TTL Dual D-Type Flip-Flop	74LS74	
IC16	503303832	IC, TTL Hex Inverter	74LS04	
IC17	503303211	IC, TTL Dual Monostable Multivibrator	74LS123	
IC18, 19	503304012	IC, A/D Converter 16-Bit	PCM78P	
IC20, 21	503304004	IC, J-FET Op-Amp.	UPC811C	
IC22	503304068	IC, HIGH SPEED J-FET INPUT Op-Amp.	LT1055CN8	
IC23	503300113	IC, CMOS Quad EX-OR	TC4051BP	
IC24	503304004	IC, J-FET Op-Amp.	UPC811C	
IC25	503304068	IC, HIGH SPEED J-FET INPUT Op-Amp.	LT1055CN8	
IC26	503304004	IC, J-FET Op-Amp.	UPC811C	
IC27	503300113	IC, CMOS Quad EX-OR	TC4051BP	
CR1 ~ 4	503100021	Di, Si V_R = 200V I_F = 1.1A	V06C	
CR5, 6	503100020	Di, Si V_R = 30V I_F = 100mA	1S953	
CR7, 8	503100021	Di, Si V_R = 200V I_F = 1.1A	V06C	
CR9, 10	503100020	Di, Si V_R = 30V I_F = 100mA	1S953	
Q1, 2	503203014	T, NPN 100mA 200mA	2SC1815	
R1, 2	501810351	R, Metal Film 5.1K 1/4W ±1%	RN1/4-5.1KF	
R3, 4	501810410	R, " 10K " "	RN1/4-10KF	
R5	501810310	R, " 1K " "	RN1/4-1KF	
R6	501810115	R, " 15K " "	RN1/4-15F	
R7	501810220	R, " 200 " "	RN1/4-200F	
R8	501810310	R, " 1K " "	RN1/4-1KF	
R9	501810115	R, " 15 " "	RN1/4-15F	
R10, 11	501810356	R, " 5.6K " "	RN1/4-5.6KF	
R12	501810220	R, " 200 " "	RN1/4-200F	
R13	501810351	R, " 5.1K " "	RN1/4-5.1KF	
R14	501810382	R, " 8.2K " "	RN1/4-8.2KF	
R15	501810410	R, " 10K " "	RN1/4-10KF	
R16	501810433	R, " 33K " "	RN1/4-33KF	

A/D Board (2/3)

Figure	Part No.	Descriptipn			Type	Remarks
R17	501810375	R, Metal Film	7.5K	1/4W ±1%	RN1/4-7.5KF	
R18	501443652	R, "	91K	" "	RP44C-91KF	
R19	501443667	R, "	10K	" "	RP44C-10KF	
R20	501810351	R, "	5.1K	" "	RN1/4-5.1KF	
R21	501810382	R, "	8.2K	" "	RN1/4-8.2KF	
R22	501810410	R, "	10K	" "	RN1/4-10KF	
R23	501810433	R, "	33K	" "	RN1/4-33KF	
R24, 25	501810375	R, "	7.5K	" "	RN1/4-7.5KF	
R26	501443667	R, "	10K	" "	RP44C-10KF	
R27	501443652	R, "	91K	" "	RP44C-91KF	
R28	501810375	R, "	7.5K	" "	RN1/4-7.5KF	
VR1, 2	505103022	R, Trimmer		10K	GF06P1-10K	
VR3, 4	505102067	R, " , Multi Turn		10K	TM7P-10K	
VR5, 6	505102066	R, " , "		500	RJ20P-500	
VR7, 8	505102067	R, " , "		10K	TM7P-10K	
VR9, 10	505102068	R, " , "		10K	TM7P-100K	
C1 ~ 6	502103189	C, Electrolytic	100μF	25WV	ECEA1EGE101	
C7 ~ 16	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C17 ~ 20	502103189	C, Electrolytic	100μF	25WV	ECEA1EGE101	
C21, 22	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C23, 24	502103189	C, Electrolytic	100μF	25WV	ECEA1EGE101	
C25, 26	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C27~30	502403092	C, "	0.1μF	"	RPE122F104Z50	
C31	502901020	C, Film	2200pF	630WV	ECQF6222KZ	
C32~35	502403092	C, Ceramic	0.1μF	50WV	RPE122F104Z50	
C36	502901020	C, Film	2200pF	630WV	ECQF6222KZ	
C37, 38	502703007	C, Mica	15pF	100WV	Z05-100V15P	
C39	502203013	C, Tantalum	1μF	35WV	CS15E1V010M	
C40	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C41	502203003	C, Tantalum	3.3μF	16WV	CS15E1C3R3M	
C42	502203032	C, "	2.2μF	35WV	CS15E1V2R2M	
C43	502203013	C, "	1μF	"	CS15E1V010M	
C44	502203003	C, "	3.3μF	16WV	CS15E1C3R3M	
C45	502203032	C, "	2.2μF	35WV	CS15E1V2R2M	
C46	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C47, 48	502203003	C, Tantalum	3.3μF	16WV	CS15E1C3R3M	
C49, 50	502703021	C, Mica	33pF	100WV	Z05-33K100	
C51, 52	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C53	502403083	C, "	270pF	"	RBU08SL271JL45AC	
C56	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	
C57, 58	502703021	C, Mica	33pF	100WV	Z05-33K100	
C59, 60	502403007	C, Ceramic	0.01μF	50WV	ROU06F103Z-L45AC	

A/D Board (3/3)

Figure	Part No.	Description			Type	Remarks
C61	502403083	C, Ceramic	270pF	50WV	RBU08SL271JL45AC	
C64	502403007	C, "	0.01μF	"	ROU06F103Z-L45AC	
P1	513500485	Connector Pin Header		44 pin	8341-044-294	
P2	513500471	Connector Pin Header		8 pin	B8B-XH-A	
S1, 2	508102334	Switch, Rotary			DRR3010	
TP1 ~ 10	513400027	Test Terminal			LC-1-G	
K1, 2	515110047	Relay			AG2013	
P.C.B.	213600100	Printed Circuit Board			3600-10	
J1, 2	513400220	Connector Pin Header			C650-2030-T003	
J1, 2	513500510	Connector Receptacle			FCN-059J102-G/B	
PC1 ~ 4	503303967	Photocoupler			TLP552	
PC5	503200146	"			TLP521-3	
PC6 ~ 9	503303967	"			TLP552	
PC10	503200146	"			TLP521-3	
RA1	501003326	Resistor Array	470x4	±5%	EXBF5E-471J	
RA2	501003401	"	10Kx4	"	EXBF5E-103J	
RA3	501003427	"	1Kx4	"	EXBF5E-102J	
RA4	501003326	"	470x4	"	EXBF5E-471J	
RA5	501003401	"	10Kx4	"	EXBF5E-103J	
RA6	501003427	"	1Kx4	"	EXBF5E-102J	
RA7	501003326	"	470x4	"	EXBF5E-471J	
RA8	501003401	"	10Kx4	"	EXBF5E-103J	
RA9	501003326	"	470x4	"	EXBF5E-471J	
RA10	501003401	"	10Kx4	"	EXBF5E-103J	
RA11	501003313	"	15Kx2	±0.1%	RA955	
RA12	501003446	"		"	RA3600	
RA13	501003313	"	15Kx2	"	RA155	
RA14	501003446	"		"	RA3600	
	518100034	Core			ESD-R-12C	
P.C.B.	213600100	Printed Circuit Board			3600-10	



P3			
No	SIGNAL	No	SIGNAL
1	EVENT 1	9	EVENT LEFT
2	EVENT 2	10	EVENT RIGHT
3	EVENT 3	11	G N D
4	EVENT 4	12	G N D
5	EVENT 5	13	G N D
6	EVENT 6	14	G N D
7	EVENT 7	15	G N D
8	EVENT 8		

P2			
No	SIGNAL	No	SIGNAL
1	EXT SAMPLE CLK	14	START
2	EXT TRIG	15	G N D
3	EXT CK	16	
4	FOOT FEED	17	
5	EXT EVENT	18	G N D
6	MEAS ON 1	19	G N D
7	MEAS ON 2	20	G N D
8	MEAS ON 3	21	G N D
9	MEAS ON 4	22	G N D
10	MEAS OFF 5	23	G N D
11	MEAS ON 6	24	G N D
12	MEAS OFF 7	25	G N D
13	MEAS ON 8		

P1			
A	No	B	
+ 5 V	1	GND	
+ 5 V	2	GND	
PLRT CM 1	7	PLRT. CM2	
PLRT. CM 3	8	PLRT CM4	
PLRT CM 5	9	PLRT CM6	
PLRT. CM 7	10	PLRT CM8	
A. B SENS1	11	A.B. SENS2	
A.B SENS3	12	B. B SENS 1	
B.B. SENS2	13	B.B SENS 3	
CM SELC A	14	CM SELC B	
CM. SELC. C	15	CM. SELC. D	
	16		
EXT. CK	17	H A/D STATUS	
MAS. WR. CS	18	MAS SYS RST	
MAS. RD. B1	19	MAS WR B1	
MAS B1 A1	20	MAS B1 A2	
MAS B1 D0	21	MAS B1 D1	
MAS B1 D2	22	MAS B1 D3	
MAS B1 D4	23	MAS. B1 D5	
MAS B1 D6	24	MAS B1 D7	
SLV WR CS	25	SLV. SYS RST	
SLV RD B1	26	SLV WR B1	
SLV B1 A1	27	SLV B1 A2	
SLV B1 D0	28	SLV B1 D1	
SLV B1 D 2	29	SLV. B1 D 3	
SLV B1 D 4	30	SLV B1 D 5	
SLV B1 D 6	31	SLV B1 D 7	
EXT. SAMPL CLK	32	EXT TRIG	

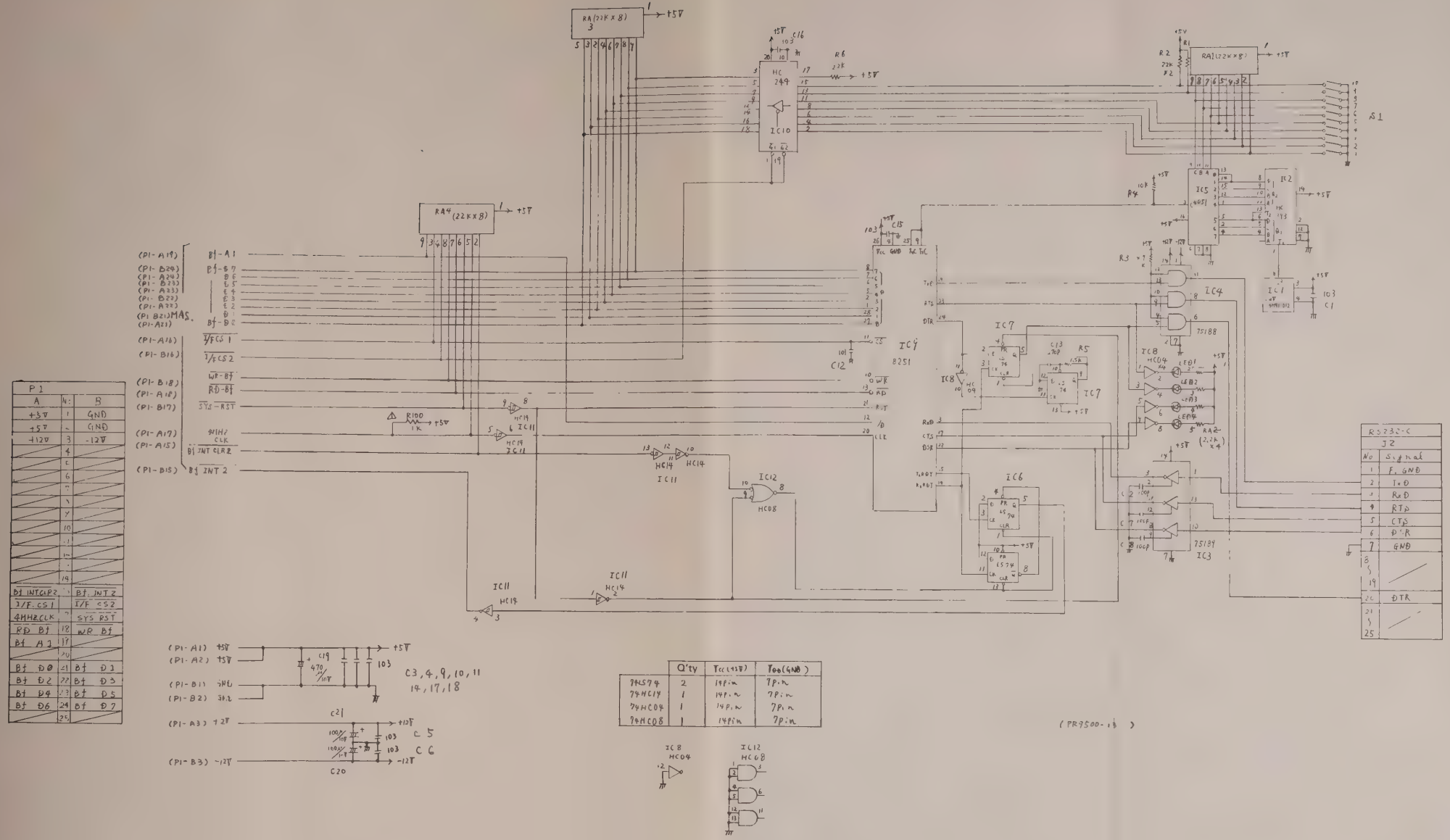
GATE IC			
	Q'ty	Vcc (+5V)	Von (GND)
74HC14	1	14 Pin	7 Pin
TC4077	3	14 Pin	7 Pin
74 HC244	2	20 Pin	10 Pin
74 HC240	3	20 Pin	10 Pin
74 HC 08	1	14 Pin	7 Pin

I/F Remote + Event (1/2)

Figure	Part No.	Description	Type	Remarks
IC1, 2	503304065	IC, CMOS Quad Exclusive NOR Gate	TC4077BP	Option
IC3	503301186	IC, TTL Dual Monostable Multivibrator	74LS123	
IC4	503304065	IC, CMOS Quad Exclusive NOR Gate	TC4077BP	Option
IC5	503303807	IC, CMOS Quad Quad 2-Input AND Gate	TC74HC08	
IC6	503303935	IC, CMOS P.I.O	μPD71055	
IC7, 8	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC9	503303887	IC, CMOS Hex Schmitt Inverter	TC74HC14	
IC10	503303960	IC, CMOS Octal Bus Buffer	TC74HC240	
IC11	503303935	IC, CMOS P.I.O.	μPD71055	
IC12	503303908	IC, CMOS Hex Bus Buffer	TC74HC367P	
IC13	503303935	IC, CMOS P.I.O.	μPD71055	
IC14, 15	503303960	IC, CMOS Octal Bus Buffer	TC74HC240	
IC16	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245P	
CR1 ~ 6	503100020	Di, Si V_R = 30V I_F = 100mA	1S953	CR1, 3 Option
R1 ~ 4	501810310	R, Metal Film 1K 1/4W ±1%	RN1/4-1KF	R1, 2 Option
R5	501810347	R, " 4.7K " "	RN1/4-1.7KF	
VR1	505103011	R, Trimmer 1K	GF06X1-1K	
C1	502103187	C, Electrolytic 470μF 10WV	ECEA1AGE471	
C2	502303009	C, Mylar Film 0.033μF 50WV	MFL05S33	
C3 ~ 5	502403009	C, Ceramic 100pF "	ROU04B101K-L05AC	
C6 ~ 20	502403007	C, Ceramic 0.01μF "	ROU06F103Z-L45AC	
RA1, 2	501003334	Resistor Array 10K ±5%	EXBF9E103J	RA1 Option
RA3	501003340	" 22K "	EXBF9E223J	
RA4, 5	501003329	" 10K "	EXBF5E103J	Option
RA6	501003334	" 10K "	EXBF9E103J	
RA7	501003340	" 22K "	EXBF9E223J	
RA8	501003411	" " "	EXBF5E223J	
RA9	501003334	" 10K "	EXBF9E103J	
RA10, 11	501003334	" " "	EXBF9E103J	
RA12	501003411	" 22K "	EXBF5E223J	
RA13, 14	501003340	" " "	EXBF9E223J	
RA15	501003329	" 10K "	EXBF5E103J	
S1	508102300	Switch	KSP10	Option
P1	513500508	Connector 64 pin	8331-064-294	
P2	513500512	" 25 pin	DBLC-J25PAF-10L6	
P3	513500511	" 15 pin	DALC-J15PAF-10L6	Option

I/F Remote + Event (2/2)

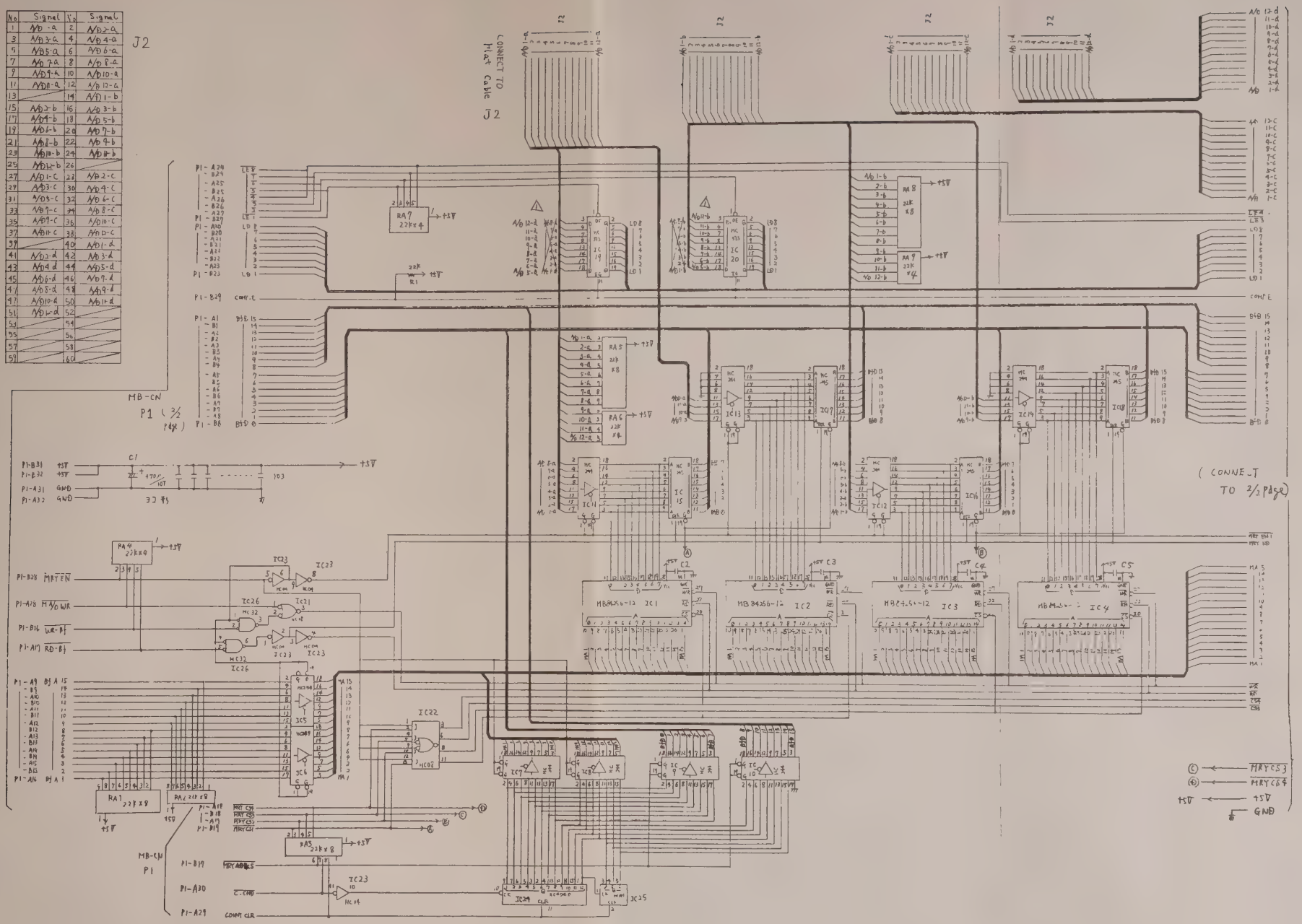
Figure	Part No.	Description	Type	Remarks
TP1, 2	513400027	Test Pin	LC-1-G	
P.C.B.	213600110	Printed Circuit Board	PR3600-11	

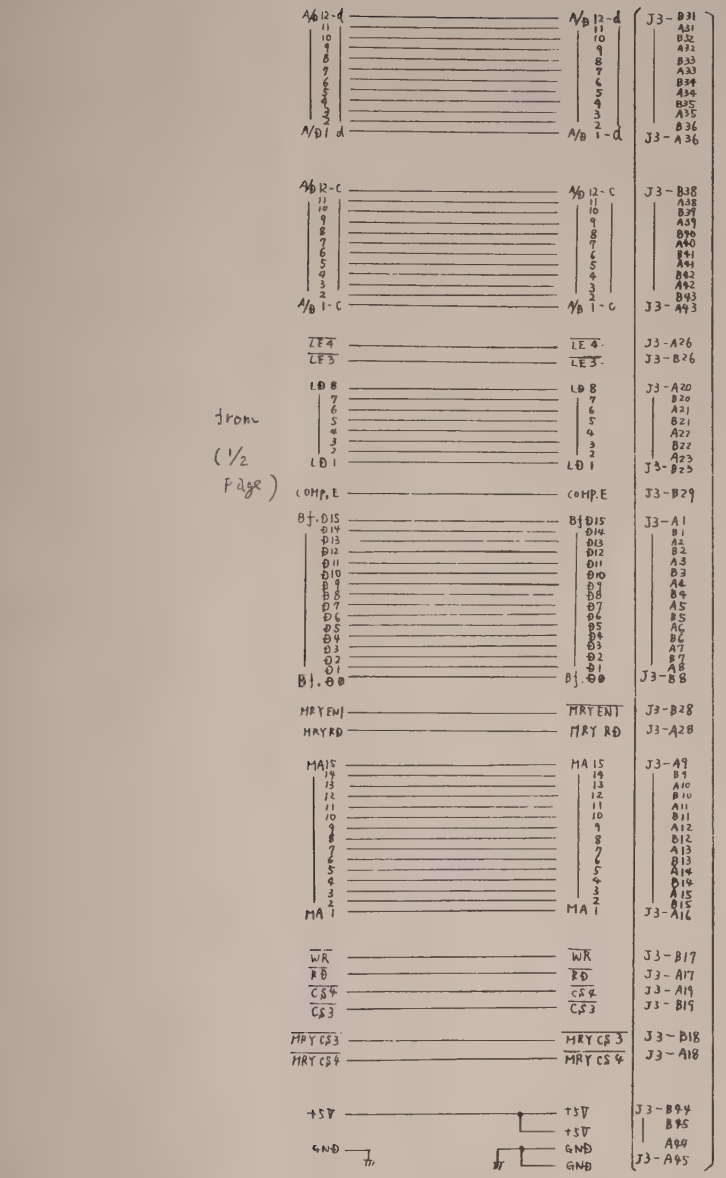


	Q'ty	Vcc(+5V)	VDD(GND)
74LS74	2	14Pin	7Pin
74HC14	1	14Pin	7Pin
74HC04	1	14Pin	7Pin
74HC08	1	14Pin	7Pin

I/F RS-232C (1/1)

Figure	Part No.	Description	Type	Remarks
IC1	503303848	IC, Clock Generator	LQV-4M91-012	
IC2	503303917	IC, Dual Binary Counter	TC74HC393	
IC3	503303411	IC, Quadruple Line Receivers	SN75189	
IC4	503303412	IC, Quadruple Line Receivers	SN75188	
IC5	503300113	IC, CMOS 8ch, Multiplexer	TC4051BP	
IC6, 7	503303470	IC, TTL Dual Type D Flip Flop	74LS74	
IC8	503303889	IC, CMOS Hex Inverter	TC74HC04	
IC9	503304030	IC, CMOS Serial Control Unit	UPD71051C	
IC10	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC11	503303887	IC, CMOS Hex Schmitt Inverter	TC74HC14	
IC12	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
LED1~4	512100017	Di, LED RED I_F = 25mA	TLR102A	
R1, 2	501810422	R, Metal Film 22K 1/4W ±1%	RN1/4-22KF	
R3	501810347	R, " 4.7K " "	RN1/4-4.7KF	
R4	501810410	R, " 10K " "	RN1/4-10KF	
R5	501810315	R, " 1.5K " "	RN1/4-1.5KF	
R6	501810422	R, " 22K " "	RN1/4-22KF	
RA1	501003340	Resistor Array 22K ±5%	EXBF9E223J	
RA2	501002812	" 2.2K "	EXBF5E222J	
RA3, 4	501003340	" 22K "	EXBF9E223J	
C1	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
C2	502403009	C, " 100pF "	ROU04B101K-L05AC	
C3 ~ 6	502403007	C, " 0.01μF "	ROU06F103Z-L45AC	
C7, 8	502403009	C, " 100pF "	ROU04B101K-L05AC	
C9 ~ 11	502403007	C, " 0.01μF "	ROU06F103Z-L45AC	
C12	502403009	C, " 100pF "	ROU04B101K-L05AC	
C13	502403083	C, " 270pF "	RBU08SL271JL45AC	
C14 ~ 18	502403007	C, " 0.01μF "	ROU06F103Z-L45AC	
C19	502103187	C, Electrolytic 470μ 10WV	ECEA1AGE471	
C20, 21	502103177	C, " 100μF "	ECEA1AGE101	
S1	508102300	Switch	KSP10	
P1	513500514	Connector Pin Header 50 pin	8341-050-294	
J2	513500513	Connector Receptacle 25 pin	DBLC-J25SAF-10L6	
P.C.B.	213600130	Printed Circuit Board	3600-13	


J2
CONNECT TO Flat Cable J2
MB-CN P1 (1/2 Page)
(CONNECT TO 2/2 Page)
MB8456-12 IC1
MB8456-12 IC2
MB8456-12 IC3
MB8456-12 IC4
MRYCS3
MRYCS4
+5V
GND



J3 - CN

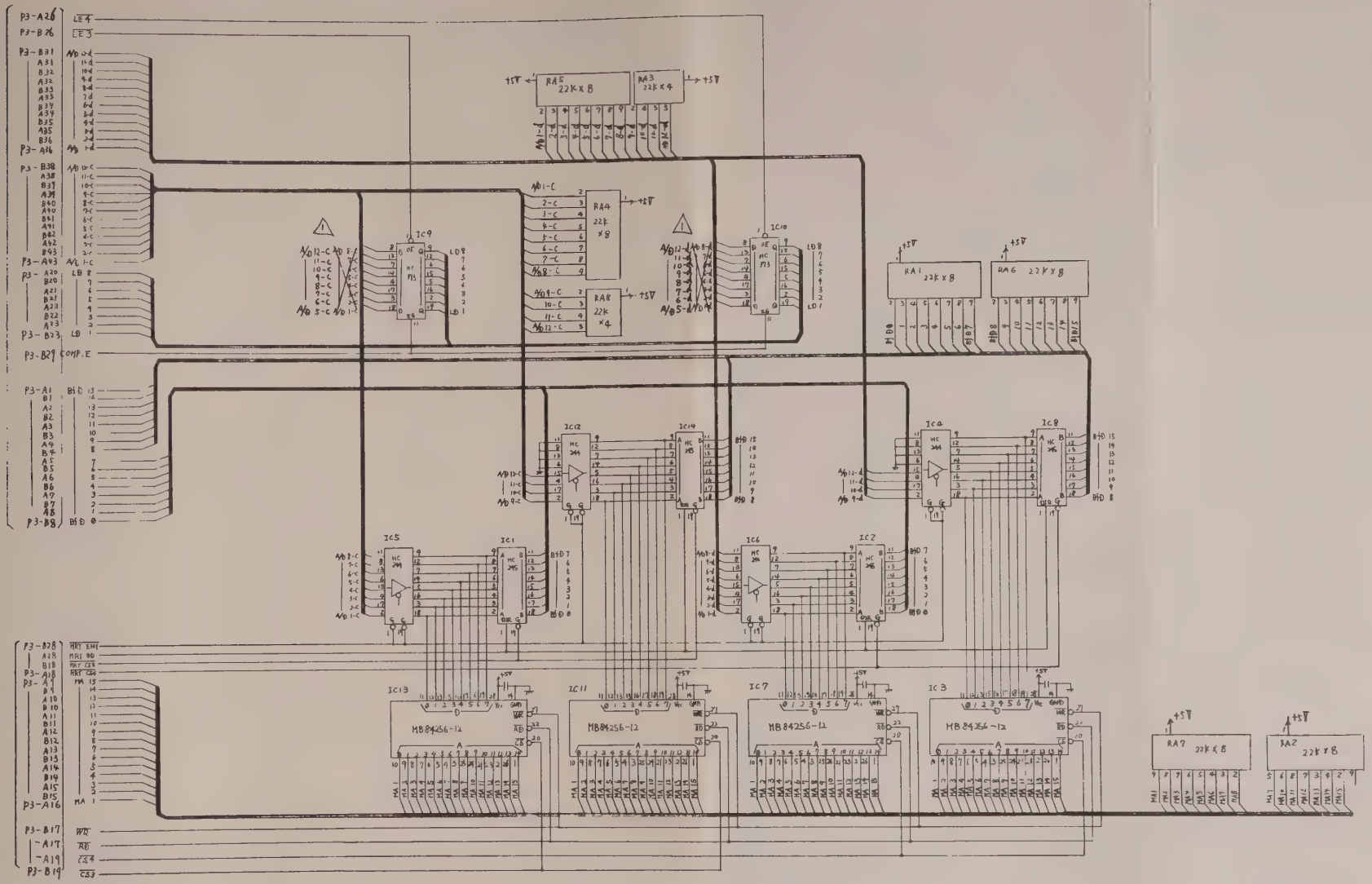
J3		
B	No	A
Bf. D14	1	Bf. D15
D12	2	D13
D10	3	D11
D8	4	D9
D6	5	D7
D4	6	D5
D2	7	D3
Bf. D0	8	Bf. D1
MA 14	9	MA 15
12	10	13
10	11	11
8	12	9
6	13	7
4	14	5
MA 2	15	3
	16	MA 1
WR	17	RD
MRY CS3	18	MRY CS4
CS3	19	CS4
LD 7	20	LD 8
LD 5	21	LD 6
LD 3	22	LD 4
LD 1	23	LD 2
	24	
	25	
LE3	26	LE4
	27	
MRY ENJ	28	MRY RD
COMP. E	29	
	30	
A/D 12-d	31	A/D 11-d
10-d	32	9-d
8-d	33	7-d
6-d	34	5-d
4-d	35	3-d
A/D 2-d	36	A/D 1-d
	37	
A/D 12-C	38	A/D 11-C
10-C	39	9-C
8-C	40	7-C
6-C	41	5-C
4-C	42	3-C
A/D 2-C	43	A/D 1-C
+5V	44	GND
+5V	45	GND

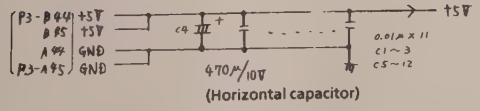
MB-CN P1

P1		
B	No	A
Bf. B19	1	Bf. D15
D12	2	D13
D10	3	D11
D8	4	D9
D6	5	D7
D4	6	D5
D2	7	D3
Bf. D0	8	Bf. D1
Bf. A14	9	Bf. A15
A12	10	A13
A10	11	A11
A8	12	A9
A6	13	A7
A4	14	A5
Bf. A2	15	A3
WR. Bf	16	Bf. A1
MRY ADR CS	17	RD, Bf
MRY CS3	18	MRY CS4
MRY CS1	19	MRY CS2
LD 7	20	LD 8
LD 5	21	LD 6
LD 3	22	LD 4
LD 1	23	LD 2
LE 7	24	LE 8
LE 5	25	LE 6
LE 3	26	LE 4
LE 1	27	LE 2
MRY. EN	28	M. A/D WR
COMP. E	29	COUNT CLR
	30	C. CMD
+5V	31	GND
+5V	32	GND

Memory A (1/1)

Figure	Part No.	Description	Type	Remarks
IC1 ~ 4	503304044	IC, CMOS 256K-BIT STATIC RAM	MB84256-10LPG	
IC5 ~ 14	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC15~18	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245	
IC19, 20	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC21, 22	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
IC23	503303889	IC, CMOS Hex Inverter	TC74HC04	
IC24	503303904	IC, CMOS 12-Stage Binary Counter	TC74HC4040	
IC25	503303917	IC, CMOS Dual Binary Counter	TC74HC393	
IC26	503303809	IC, CMOS Quad 2-Input OR Gate	TC74HC32	
R1 ·	501810422	R, Metal Film 22K 1/4W ±1%	RN1/4-22KF	
C1	502103191	C, Electrolytic 470μF 10WV	ECEB1AGE471	
C2 ~ 5	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
RA1 ~ 3	501003340	Resistor Array 22K ±5%	EXBF9E-223J	
RA4	501003328	" " "	EXBF5E-223J	
RA5	501003340	" " "	EXBF9E-223J	
RA6, 7	501003328	" " "	EXBF5E-223J	
RA8	501003340	" " "	EXBF9E-223J	
RA9	501003328	" " "	EXBF5E-223J	
P1	513500505	Connector 64 pin	8341-064-294	
J2	521000300	Flat Cable 60 pin	9500-08 (60P)	
J3	513500486	Connector 90 pin	8330-090-283	
P.C.B.	213600060	Printed Circuit Board	PR3600-06	
	307600006		WLS-16.8-0	



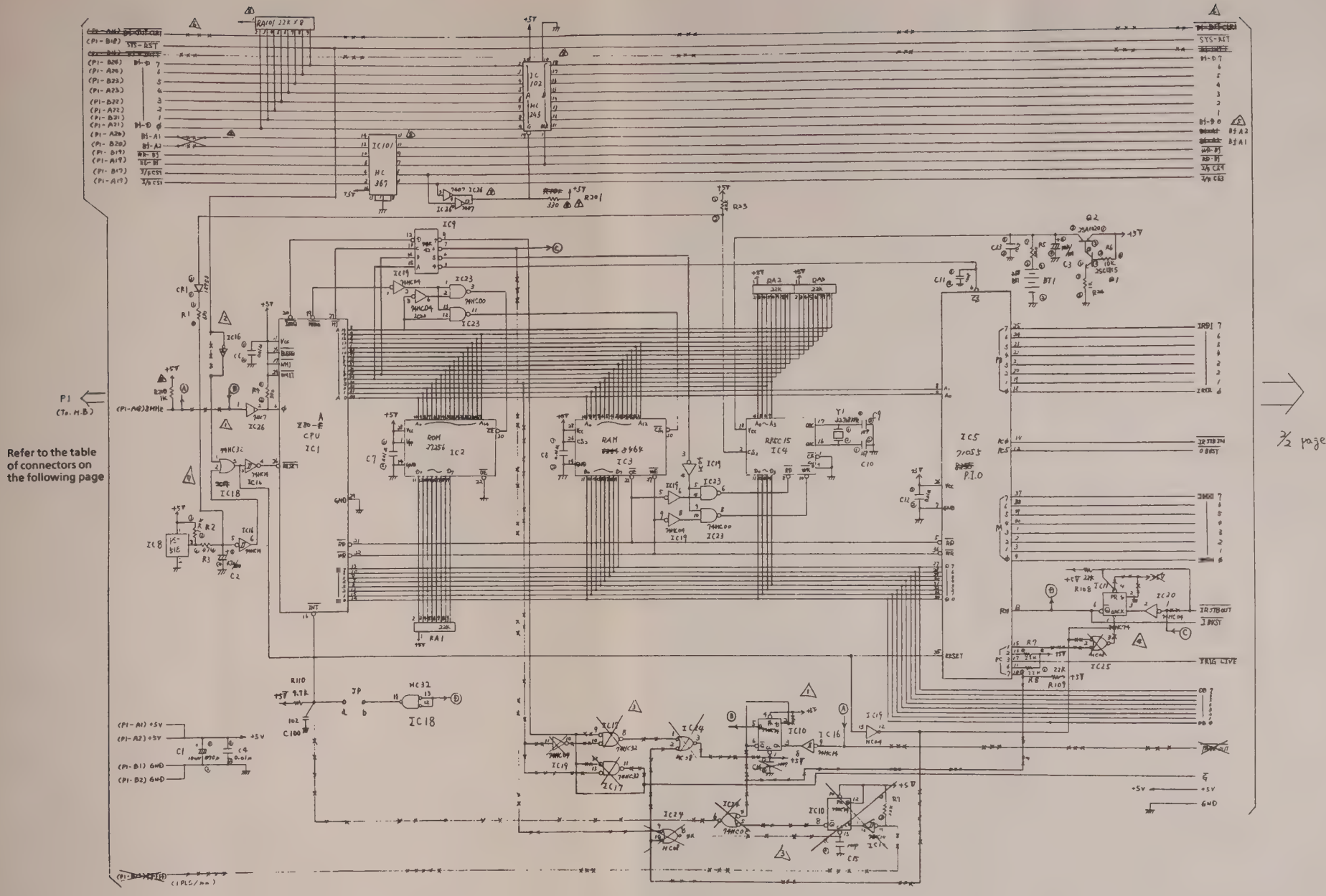


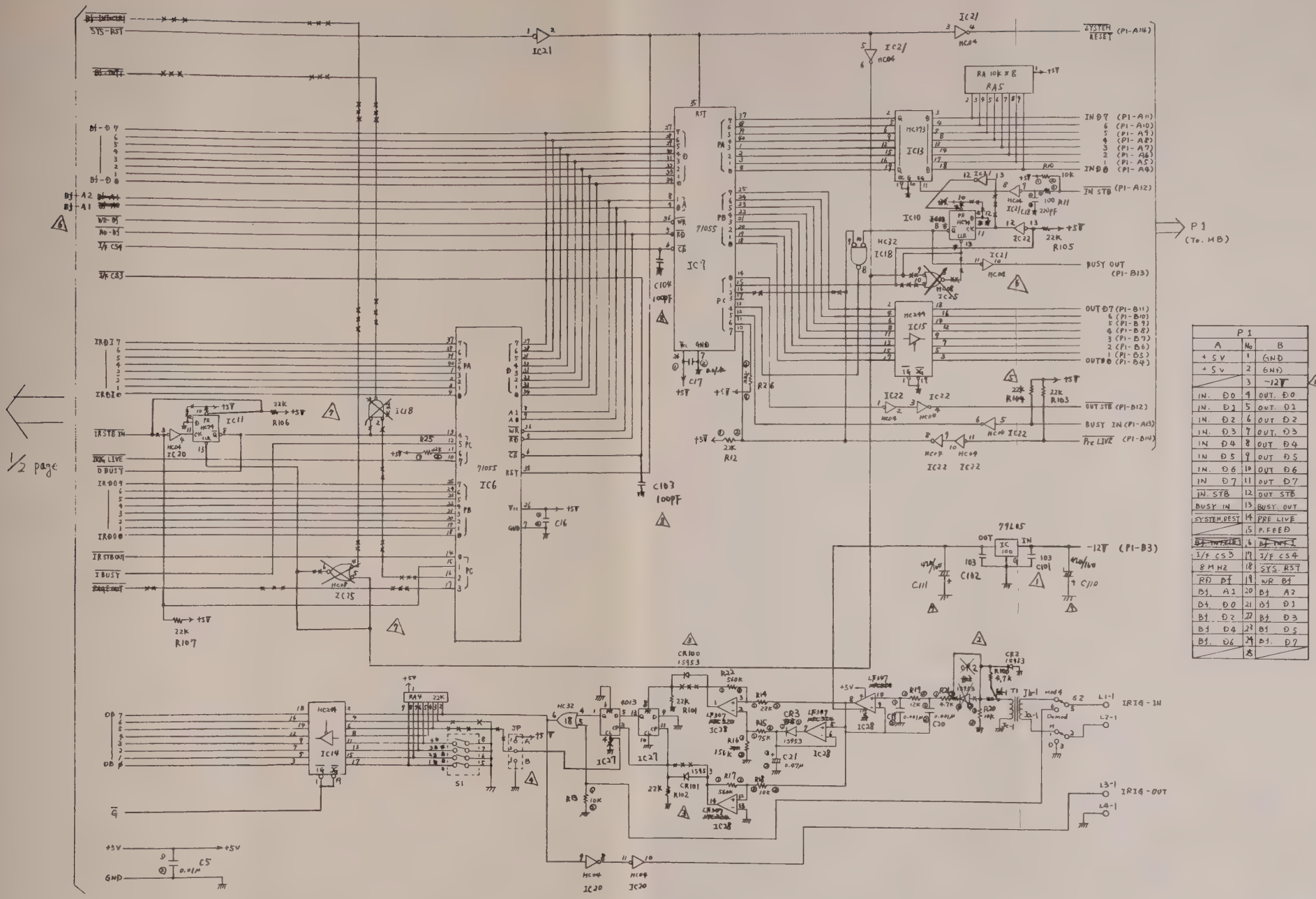
(Horizontal capacitor)

P3		
B	No	A
B1. D14	1	B1. D15
B1. D12	2	B1. D13
B1. D10	3	B1. D11
B1. D8	4	B1. D9
B1. D6	5	B1. D7
B1. D4	6	B1. D5
B1. D2	7	B1. D3
B1. D0	8	B1. D1
MA14	9	MA15
MA12	10	MA13
MA10	11	MA11
MA8	12	MA9
MA6	13	MA7
MA4	14	MA5
MA2	15	MA3
	16	MA1
WR	17	RD
MRY CS3	18	MRY CS4
CS3	19	CS4
LD 7	20	LD 8
LD 5	21	LD 6
LD 3	22	LD 4
LD 1	23	LD 2
	24	
	25	
LE 3	26	LE 4
	27	
MRY EN1	28	MRY. RD
COMP E	29	
	30	
A/D12-C	31	A/D11-C
A/D 10-C	32	A/D 9-C
A/D 8-C	33	A/D 7-C
A/D 6-C	34	A/D 5-C
A/D 4-C	35	A/D 3-C
A/D 2-C	36	A/D 1-C
	37	
A/D 12-C	38	A/D 11-C
A/D 10-C	39	A/D 9-C
A/D 8-C	40	A/D 7-C
A/D 6-C	41	A/D 5-C
A/D 4-C	42	A/D 3-C
A/D 2-C	43	A/D 1-C
+5V	44	GND
+5V	45	GND

Memory B (1/1)

Figure	Part No.	Description	Type	Remarks
IC1, 2	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245	
IC3	503304044	IC, CMOS 256K-BIT STATIC RAM	MB84256-10LPG	
IC4 ~ 6	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC7	503304044	IC, CMOS 256K-BIT STATIC RAM	MB84256-10LPG	
IC8	503303897	IC, CMOS Octal Bus Transceiver	TC74HC255	
IC9, 10	503303888	IC, CMOS Octal D-Type Latch	TC74HC373	
IC11	503304044	IC, CMOS 256K-BIT STATIC RAM	MB84256-10LPG	
IC12	503303896	IC, CMOS Octal Bus Buffer	TC74HC244	
IC13	503304044	IC, CMOS 256K-BIT STATIC RAM	MB84256-10LPG	
IC14	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245	
RA1, 2	501003340	Resistor Array 22K ±5%	EXBF9E-223J	
RA3	501003328	" " "	EXBF5E-223J	
RA4 ~ 7	501003340	" " "	EXBF9E-223J	
RA8	501003328	" " "	EXBF5E-223J	
C1 ~ 3	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
C4	502103191		ECEB1AGE471	
C5 ~ 12	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
P3	513500515	Connector 90 pin	8431-090-294	
P.C.B.	213600106	Printed Circuit Board	PR3600-106	


P1
(To. M.B)
Refer to the table of connectors on the following page
1/2 page
CPU IC1
ROM 27256 IC2
RAM 8464 IC3
RPEC 15 IC4
IC5 7105S P.I.O
IC18
IRIG LIVE
(1 PLS/m)



P1		
A	No	B
+5V	1	GND
+5V	2	GND
	3	-12V
IN. D0	4	OUT. D0
IN. D1	5	OUT. D1
IN. D2	6	OUT D2
IN. D3	7	OUT. D3
IN D4	8	OUT D4
IN D5	9	OUT D5
IN. D6	10	OUT D6
IN D7	11	OUT D7
IN. STB	12	OUT STB
BUSY IN	13	BUSY OUT
SYSTEM RESET	14	PRE LIVE
	15	P. FEED
BI INTERRUPT	16	BI INT I
I/F CS3	17	I/F CS4
8 MHz	18	SYS. RST
RD BI	19	WR BI
BI. A1	20	BI A2
BI D0	21	BI D1
BI D2	22	BI D3
BI D4	23	BI D5
BI. D6	24	BI. D7
	25	

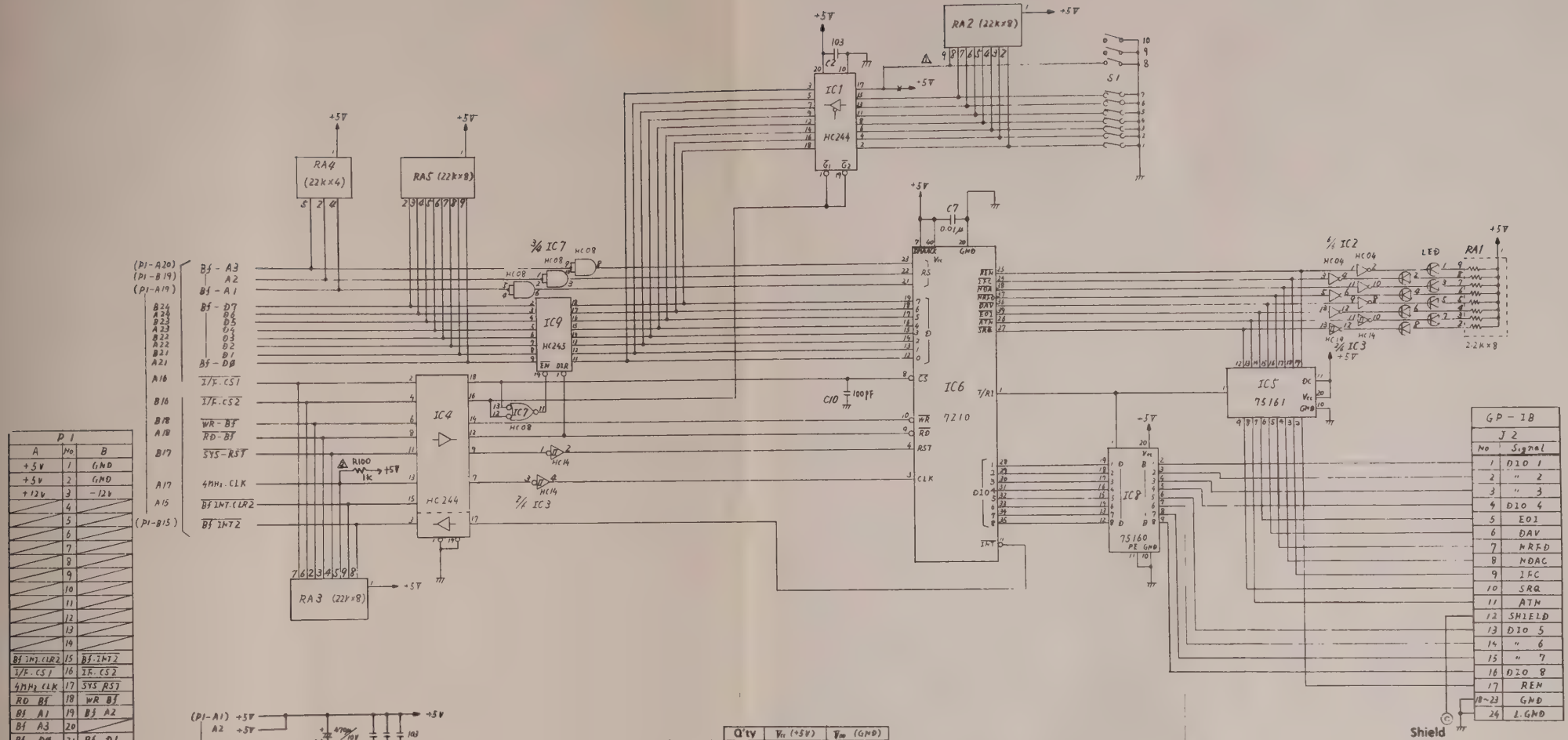
1/2 page

I/F IRIG (1/2)

Figure	Part No.	Description	Type	Remarks
IC1	503301180	IC, NMOS CPU	LH0080A-Z80-CPU	
IC2	503303866	IC, EPROM	MBM27256-25	
IC3	503304066	IC, CMOS Static RAM	MB8464A-15SK	
IC4	503303824	IC, Timer	RP5C15	
IC5 ~ 7	503303935	IC, CMOS P.I.O.	μPD71055C	
IC8	503301188	IC, Reset	PST518A	
IC9	503303808	IC, CMOS BCD To Decimal Decoder	TC74HC42	
IC10, 11	503303891	IC, " Dual D-Type Flip Flop	TC74HC74	
IC13	503303888	IC, " Octal D-Type Latch	TC74HC373	
IC14, 15	503303896	IC, " Octal Bus Buffer	TC74HC244	
IC16	503303887	IC, " Hex Schmitt Inverter	TC74HC14	
IC18	503303809	IC, " Quad 2-Input OR Gate	TC74HC32	
IC19~22	503303889	IC, " Hex Inverter	TC74HC04	
IC23	503303892	IC, " Quad 2-Input NAND Gate	TC74HC00	
IC26	503303487	IC, TTL Hex Buffer	HD7407	
IC27	503300064	IC, CMOS Dual D-Type Flip Flop	TC4013BP	
IC28	503304067	IC, Quad Op-Amp	LF347N	
IC100	503303972	IC, Voltage Regulator −5V	AN79L05	
IC101	503303908	IC, CMOS Hex Bus Buffer	TC74HC367P	
IC102	503303897	IC, " Octal Bus Transceiver	TC74HC245P	
CR1 ~ 3	503100020	Di, Si V_R = 30V I_F = 100mA	1S953	
CR100, 101	"	Di, " " "	"	
Q1	503203014	T, NPN 30V 100mA 200mW	2SC1815	
Q2	503203019	T, PNP −50V −2A 900mW	2SA1020	
R1	501810268	R, Metal Film 680 1/4W ±1%	RN1/4-680F	
R2	501810510	R, " 100K " "	RN1/4-100KF	
R3	501810147	R, " 47 " "	RN1/4-47F	
R4	501810233	R, " 330 " "	RN1/4-330F	
R5	501810222	R, " 220 " "	RN1/4-220F	
R6	501810410	R, " 10K " "	RN1/4-10KF	
R7, 8	501810422	R, " 22K " "	RN1/4-22KF	
R10	501810410	R, " 10K " "	RN1/4-10KF	
R11	501810210	R, " 100 " "	RN1/4-100F	
R12	501810422	R, " 22K " "	RN1/4-22KF	
R13	501810410	R, " 10K " "	RN1/4-10KF	
R14	501810422	R, " 22K " "	RN1/4-22KF	
R15	501810475	R, " 75K " "	RN1/4-75KF	
R16	501810515	R, " 150K " "	RN1/4-150KF	
R17	501810556	R, " 560K " "	RN1/4-560KF	
R18	501810410	R, " 10K " "	RN1/4-10KF	
R19	501810412	R, " 12K " "	RN1/4-12KF	

I/F IRIG (2/2)

Figure	Part No.	Description				Type	Remarks
R20	501810410	R, Metal Film	10K	1/4W	±1%	RN1/4-10KF	
R21	501810347	R	4.7K	"	"	RN1/4-4.7KF	
R22	501810556	R	560K	"	"	RN1/4-560KF	
R23	501810422	R "	22K	"	"	RN1/4-22KF	
R24	501810310	R "	1K	"	"	RN1/4-1KF	
R25, 26	501810422	R "	22K	"	"	RN1/4-22KF	
R100	501810347	R "	4.7K	"	"	RN1/4-4.7KF	
R101~109	501810422	R "	22K	"	"	RN1/4-22KF	
R110	501810347	R "	4.7K	"	"	RN1/4-4.7KF	
C1	502103187	C, Electrolytic	470μF	10WV		ECEA1AGE471	
C2	502203008	C, Tantalum	4.7μF	16WV		CT15E1C4R7M	
C3	502103177	C, Electrolytic	100μF	10WV		ECEA1AGE101	
C4 ~ 8	502403007	C, Ceramic	0.01μF	50WV		ROU06F103Z-L45AC	
C9, 10	502703007	C, Mica	15pF	100WV		Z05-100V15P	
C11	502403009	C, Ceramic	100pF	50WV		ROU04B101K-L05AC	
C12, 13	502403007	C, "	0.01μF	"		ROU06F103Z-L45AC	
C16, 17	"	C, "	"	"		"	
C18	502403002	C, "	220pF	"		ROU04B221K-L05AC	
C19, 20	502303002	C, Mylar Film	0.001μF	"		MFL05D1	
C21	502203015	C, Tantalum	47μF	35WV		CS15E1VR47M	
C100	502403015	C, Ceramic	0.001μF	50WV		ROU05102K-L05AC	
C101,102	502403007	C, "	0.01μF	"		ROU06F103Z-L45AC	
C103,104	502403009	C, "	100pF	"		ROU04B101K-L05AC	
C110,111	502103114	C, Electrolytic	47μF	16WV		ECEA1CU470	
RA1 ~ 4	501003340	Resistor Array	22K		±5%	EXBF9E-223J	
RA5	501003415	"	10K		"	EXBF9E-103J	
RA101	501003340	"	22K		"	EXBF9E-223J	
BT1	518100012	Battery				3-51FT-P	
Y1	502901015	Crystal				KF38G (32.768K)	
S1	508102309	Switch				KSP04	
S2	508102335	"				ATZN-6M3	
T1							
P1	513500514	Connector	50 pin			8341-050-294	
IC2	513400119	IC Socket				228-AG29D	
P.C.B.	213600120	Printed Circuit Board				PR3600-12	



P1		
A	No	B
+5V	1	GND
+5V	2	GND
+12V	3	−12V
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
BF INT. CLR2	15	BF INT2
I/F. CS1	16	I/F. CS2
4MHz CLK	17	SYS RST
RD BF	18	WR BF
BF A1	19	BF A2
BF A3	20	
BF D0	21	BF D1
BF D2	22	BF D3
BF D4	23	BF D5
BF D6	24	BF D7
	25	

	Q'ty	V_{cc} (+5V)	V_{GND} (GND)
74HC14	1	14	7 PIN
74HC04	2	14	7
74HC08	1	14	7
74HC244	3	20	10
74HC245	1	20	10

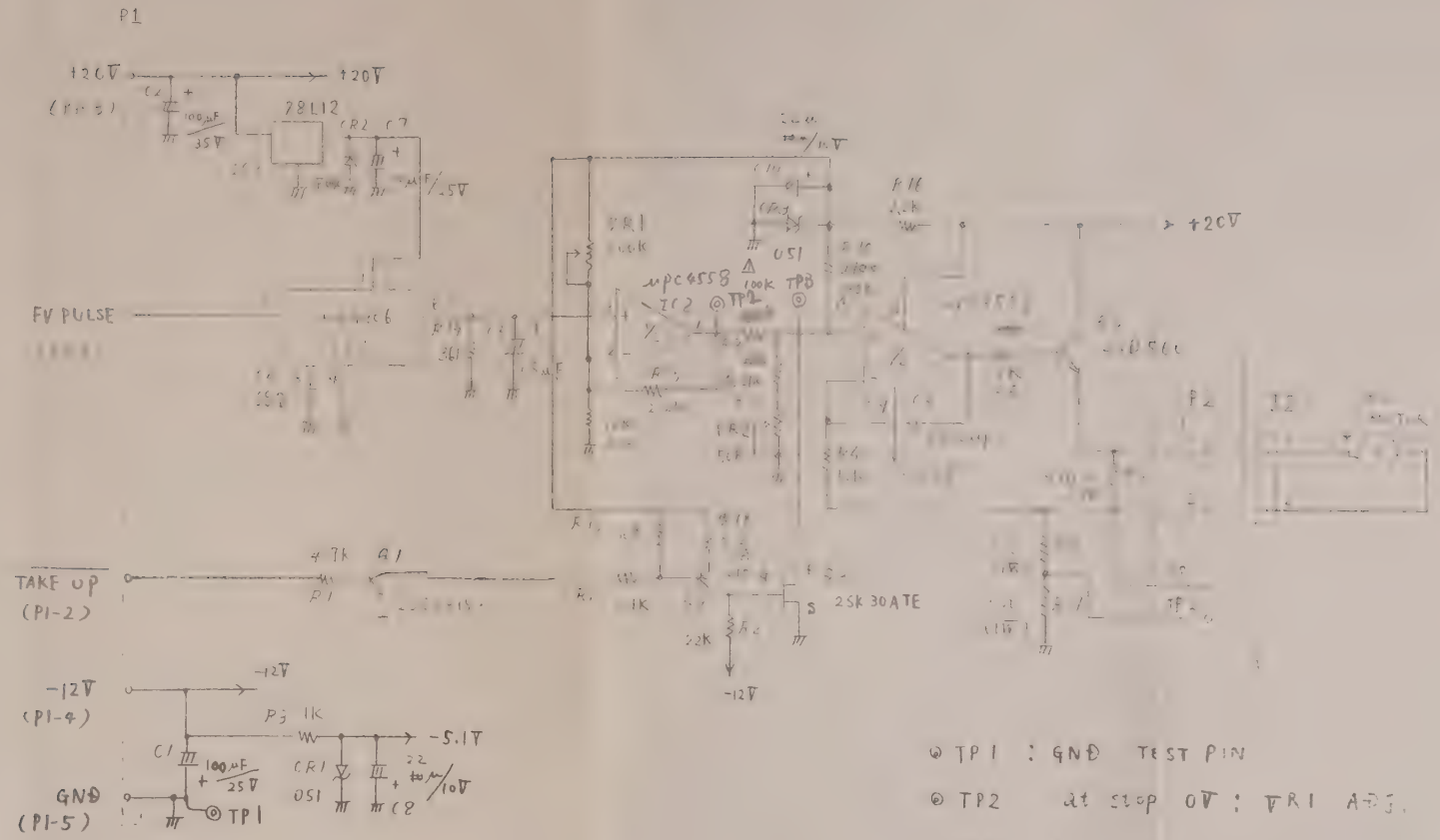
GP-IB	
J2	
No	Signal
1	DIO 1
2	" 2
3	" 3
4	DIO 4
5	EOI
6	DAV
7	NRFD
8	NDAC
9	IFC
10	SRQ
11	ATN
12	SHIELD
13	DIO 5
14	" 6
15	" 7
16	DIO 8
17	REN
18~23	GND
24	L.GND

I/F GP-IB (1/1)

Figure	Part No.	Description	Type	Remarks
IC1	503303896	IC, CMOS Octal Bus Buffer	TC74HC244P	
IC2	503303889	IC, CMOS Hex Inverter	TC74HC04P	
IC3	503303887	IC, CMOS Hex Schmitt Inverter	TC74HC14P	
IC4	503303896	IC, CMOS Octal Bus Buffer	TC74HC244P	
IC5	503303414	IC, Interface Bus Transceivers	HD75161AP	
IC6	503302080	IC, GP-IB Interface Controller	UPD7210	
IC7	503303807	IC, CMOS Quad 2-Input AND Gate	TC74HC08	
IC8	503303413	IC, Interface Bus Transceivers	HD75160AP	
IC9	503303897	IC, CMOS Octal Bus Transceiver	TC74HC245P	
LED1~8	512100017	Di, LED	TLR102A	
RA1	501003332	Resistor Array 2.2K ±5%	EXBF9E-222J	
RA2, 3	501003340	" 22K "	EXBF9E-223J	
RA4	501002832	" " "	EXBF5E-223J	
RA5	501003340	" " "	EXBF9E-223J	
C1	502103187	C, Electrolytic 470μ 10WV	ECEA1AGE471	
C2 ~ 9	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
C10	502403009	C, Ceramic 100pF "	ROU04B101K-L05AC	
C11	502403007	C, Ceramic 0.01μF "	ROU06F103Z-L45AC	
S1	508102300	Switch	KSP10	
P1	513500514	Connector, Pin Header 50 pin	8341-050-294	
J2	513308901	Connector 24 pin	57LE20240-770012	
P.C.B.	213600200	Printed Circuit Board	3600-20	

P1

No.	Signal
1	FV PULSE
2	TAKE UP
3	+20V
4	12V
5	GND



◎ TP1 : GND TEST PIN

◎ TP2 at stop 0V ; VR1 Adj.

◎ TP3 1rev/sec ≈ 0.40V ± 0.5V VR2 Adj.
△ 0.90V ± 0.2V

Roll Paper Take-up Unit (1/1)

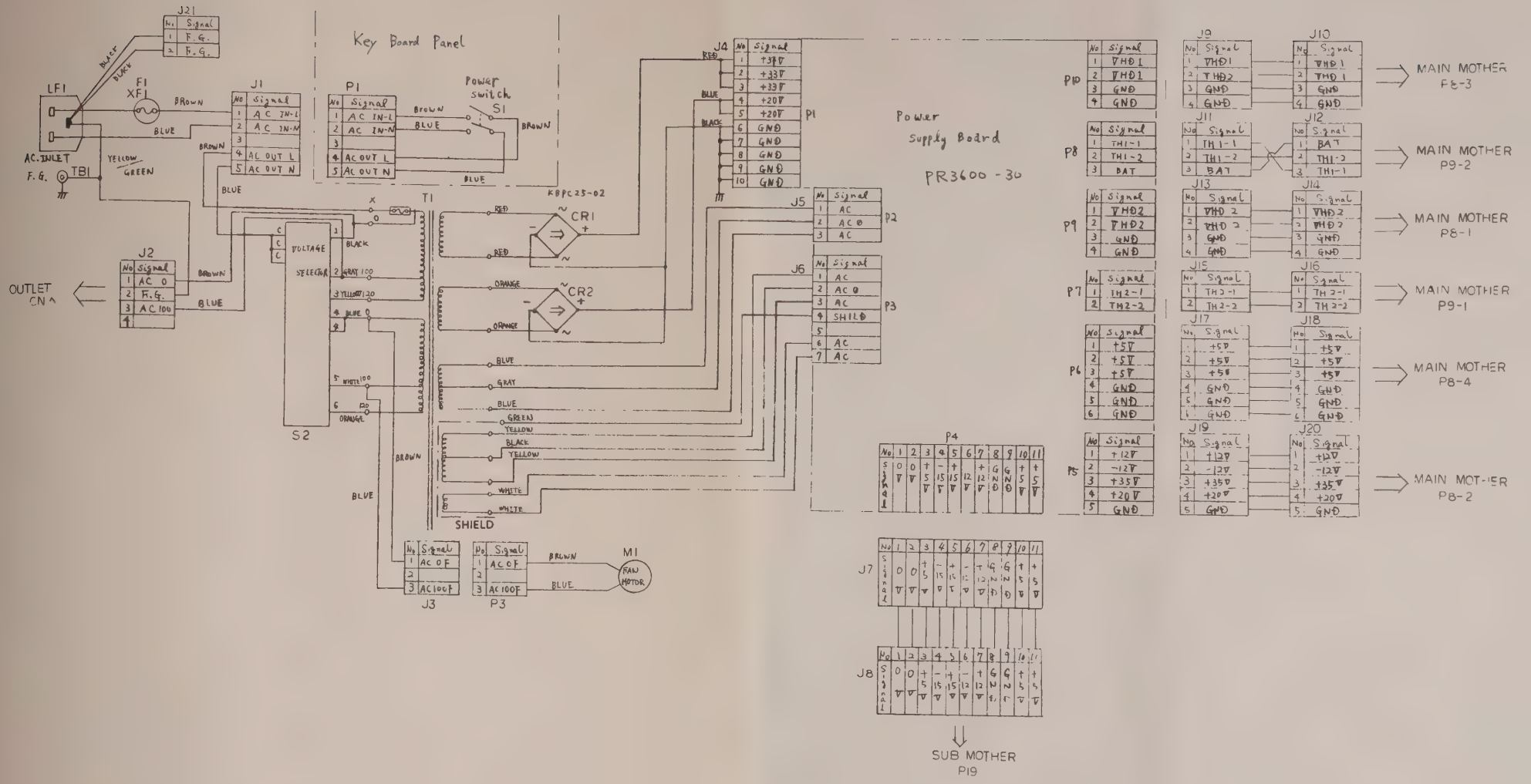
Figure	Part No.	Description		Type	Remarks
J1	513500517	Connector	5 pin	XHP-5	
J2	513500516	"	2 pin	XHP-2	
J1, J2	513400210	Contact Pin		SXH-001T-0.6	
P1	513200601	Connector Plug	6P	1625-06P	
P1	513400002	Contact Pin		1854TL	
M1	509100017	DC Motor		LN30-N21N1	

Roll Take-up Circuit Board (1/2)

Figure	Part No.	Description	Type	Remarks
IC1	503300122	IC, F/V Converter	MB4206BP	
IC2	503300054	IC, Quad Op-Amp	μPC4558C	
IC3	503303978	IC, Voltage Regulator	AN78L12	
CR1	503100060	Di, Zener 5.1V	RD5.1EB3	
CR2	503100021	Di, Si V_R = 200V I_F = 1.1A	SD, V06C	
CR3	503100060	Di, Zener 5.1V	RD5.1EB3	
Q1	503203014	T, NPN 30V 100mA 200mW	2SC1815	
Q3	503200027	T, N-J FET	2SK30A-Y	
Q4	503203016	T, NPN −30V −100mA 200mW	2SA1015, Y,	
Q5	503203064	T, NPN 60V 2A 2W	2SD560-K	
R1	501810347	R, Metal Film 4.7K 1/4W ±1%	RN1/4-4.7KF	
R2	501810422	R, " 22K " "	RN1/4-22KF	
R3	501810310	R, " 1K " "	RN1/4-1KF	
R4	501810410	R, " " " "	RN1/4-10KF	
R5	501810310	R, " " " "	RN1/4-1KF	
R6	501810351	R, " 5.1K " "	RN1/4-5.1KF	
R7		R, " 470 1W ±5%	RSF1B-470J	
R8	501605711	R, " 1 " "	RSF1B-1J	
R9	501810515	R, " 150K 1/4W ±1%	RN1/4-150KF	
R10	501810527	R, " 270K " "	RN1/4-270KF	
R11	501810415	R, " 15K " "	RN1/4-15KF	
R12	501810347	R, " 4.7K " "	RN1/4-4.7KF	
R13	501810410	R, " 10K " "	RN1/4-10KF	
R14	501810436	R, " 36K " "	RN1/4-36KF	
R15, 16	501810322	R, " 2.2K " "	RN1/4-2.2KF	
R17	501605711	R, " 1 1W ±5%	RSF1B-1J	
R18	501810410	R, " 10K 1/4W "	RN1/4-10KF	
VR1	505103029	R, Trimmer Cermet 500K	GF06P-500K	
VR2	505103027	R, " 50K	GF06P-50K	
C1	502103124	C, Electrolytic 10μF 50WV	ECEA1EV101	
C2	502103092	C, " " "	ECEA1VU101	
C3	502303008	C, Mylar Film 0.022μ "	MFL-05S22	
C4	502303013	C, " 0.068μ "	MFL-05D68	
C5	502203024	C, Tantalum 1.5μ 20WV	CS15E1D1R5M	
C7	502103128	C, Electrolytic 10μF 25WV	ECEA1EU100	
TP1, 2, 3	513400027	Test Terminal	LC-1-G	
P.C.B.	213600500	Printed Circuit Board	PR3600-50	

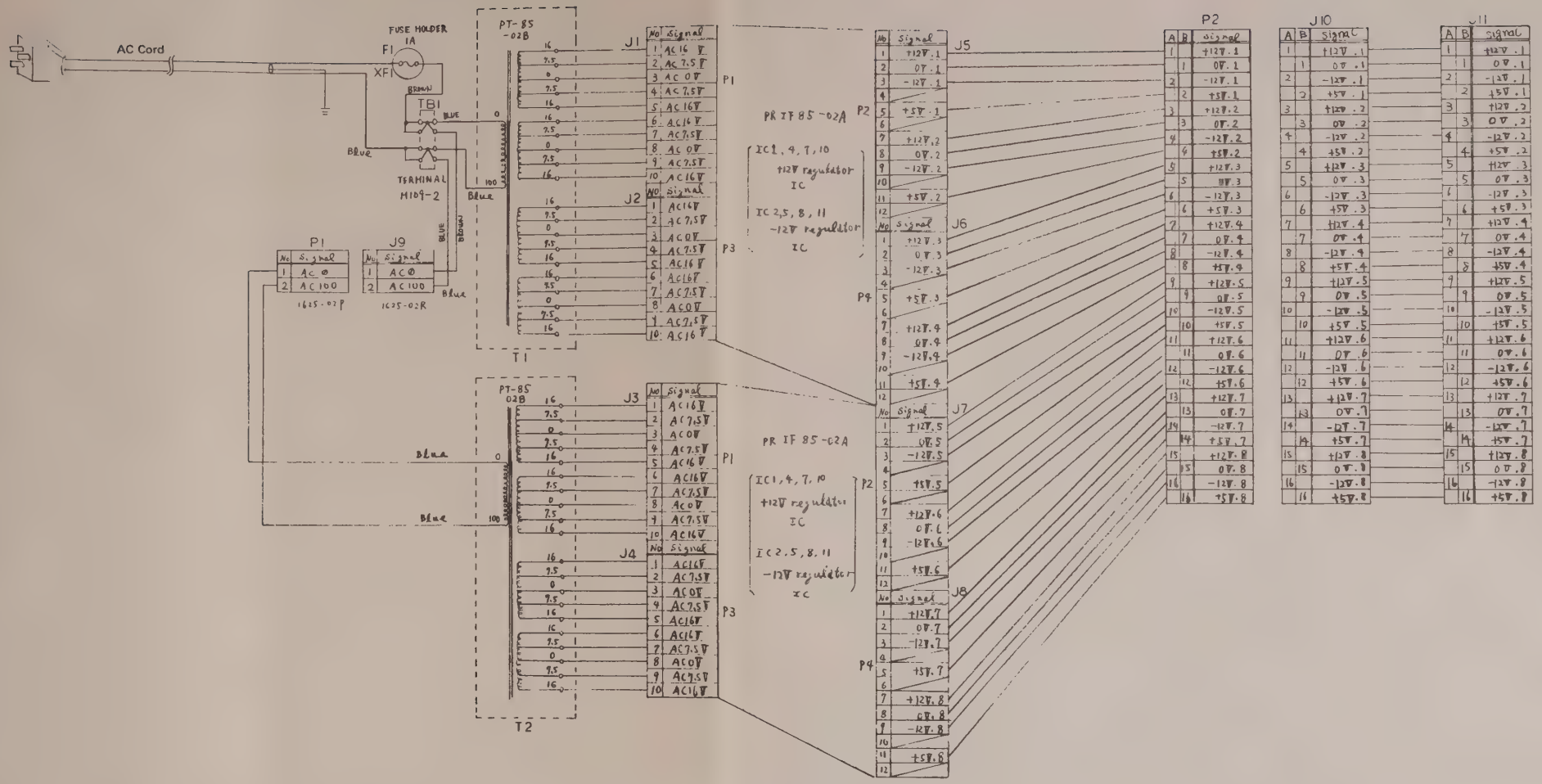
Roll Take-up Circuit Board (2/2)

Figure	Part No.	Description		Type	Remarks
P2	513303913	Connector	2 pin	B2B-XH-A	
P1	513300518	"	5 pin	B5B-XH-A	
	036008300				


Key Board Panel
Power switch
S1
P1
J1
J21
LF1
F1
XF1
AC INLET
F.G.
TB1
BROWN
BLUE
YELLOW GREEN
BLACK
KBPC25-02
CR1
CR2
T1
S2
VOLTAGE SELECTOR
J2
OUTLET CN^
J3
P3
M1
FAN MOTOR
SHIELD
J4
J5
J6
P2
P3
Power Supply Board
PR3600-30
P4
P5
J7
J8
SUB MOTHER P19
P10
P8
P9
P7
P6
J9
J10
J11
J12
J13
J14
J15
J16
J17
J18
J19
J20
MAIN MOTHER P8-3
MAIN MOTHER P9-2
MAIN MOTHER P8-1
MAIN MOTHER P9-1
MAIN MOTHER P8-4
MAIN MOTHER P8-2

Power Box (1/1)

Figure	Part No.	Description	Type	Remarks
CR1, 2	503103013	Diode Bridge	KBPC25-02	
LF1	518100036	Line Filter	ZUG2210-11A	
XF1	512400002	Fuse Holder	SN-2059	
F1	512300024	Fuse 8A	GDL8A	
TB1	514400004	Terminal	SQ0204-02	
P1	513200502	Connector, Plug 5 pin	1625-5P-1	
P3	513200301	" , " 3 pin	1625-03P-1	
P1, 3	513400021	Contact Pin	1560TL	
J1	513200503	Connector, Receptacle 5 pin	1625-5R-1	
J2	513200404	" , " 4 pin	1625-04R-1	
J3	513200302	" , " 3 pin	1625-03R-1	
J4	513500480	" , " 10 pin	5196-10	
J5	513400248	" , " 3 pin	5195-03	
J6	513400175	" , " 7 pin	5195-07	
J7, 8	513500481	" , " 11 pin	5196-11	
J9, 10	513400174	" , " 4 pin	5195-04	
J11, 12	513400041	" , " 3 pin	HNC2-2.5S-3	
J13, 14	513400174	" , " 4 pin	5195-04	
J15, 16	513400043	" , " 2 pin	HNC2-2.5S-2	
J17, 18	513400222	" , " 6 pin	5195-06	
J19, 20	513400218	" , " 5 pin	5195-05	
J21	513200203	" , " 2 pin	1625-2R-1	
J1 ~ 3	513400022	Contact Pin	1561TL	
J4 ~ 10	513400212	"	5194TL	
J11, 12	513400037	"	HNC2.5S-A	
J13, 14	513400212	"	5194TL	
J15, 16	513400037	"	5194TL	
J21	513400022	"	1561TL	
S2	513501001	AC Selector, Plug	9208 Plug	
S2	513501002	AC Selector, Socket	9209 Socket	
M1	509100031	Fan Motor	MU1225S-11	
T1	510360010	Transformer	PT9500B	

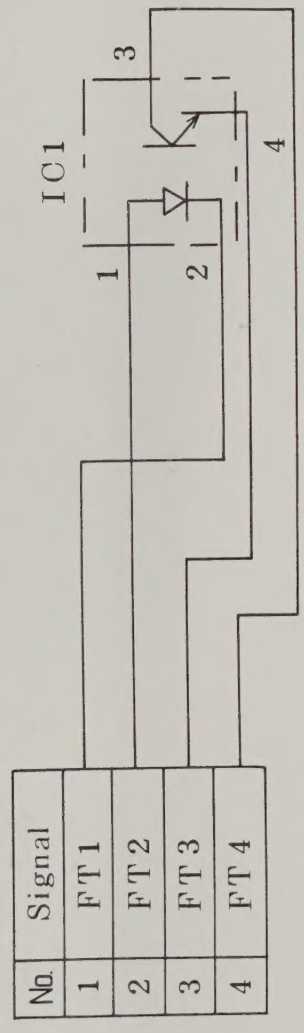

AC Cord
FUSE HOLDER
1A
F1
XF1
TB1
TERMINAL
M109-2
BLUE
BROWN
P1
J9
1625-02P
1625-02R
PT-85
-02B
T1
T2
J1
J2
J3
J4
PR IF 85-02A
IC1, 4, 7, 10
+12V regulator
IC
IC2, 5, 8, 11
-12V regulator
IC
J5
J6
J7
J8
P2
P3
P4
J10
J11

Isolation Box (1/1)

Figure	Part No.	Description		Type	Remarks
J1 ~ 4	513400072	Connector, Receptacle	10 pin	HNC2-2.5S-10	
J5 ~ 8	513400065	"	12 pin	HNC2-2.5S-12	
J9	513200203	"	2 pin	1625-02R-1	
J10 ~ 11	513400141	"	32 pin	FCN361J032-AG	
T1, 2	208500021	Transformer		PT85-02C	
P1	513200202	Connector, Plug	2 pin	1625-02P-1	
P2	513400149	Connector, Pin Header	32 pin	FCN361P032-AG	
XF1	512400002	Fuse Holder		SN-2059	
F1	512300001	Fuse, 1A		SM-1101-1A	
TB1	514100321	Terminal		M109-2	
J1 ~ 8	513400037	Contact Pin		HNC2-2.5S-A	
J9	513400002	Contact Pin		1855TL	
J10, 11	513400142	Connector Cover		FCN360C032-B	
P1	513400001	Contact Pin		1854TL	
P2	520110081			FCN360-A4	
	520100037	AC Cord		P34SVT	

Isolation Board (1/1)

Figure	Part No.	Description	Type	Remarks
IC1	503303436	IC, Voltage Regulator 12V 1A	AN7812F	
IC2	503303423	IC, " −12V "	AN7912F	
IC3	503303426	IC, " 5V "	AN7805F	
IC4	503303436	IC, " 12V "	AN7812F	
IC5	503303423	IC, " −12V "	AN7912F	
IC6	503303426	IC, " 5V "	AN7805F	
IC7	503303436	IC, " 12V "	AN7812F	
IC8	503303423	IC, " −12V "	AN7912F	
IC9	503303426	IC, " 5V "	AN7805F	
IC10	503303436	IC, " 12V "	AN7812F	
IC11	503303423	IC, " −12V "	AN7912F	
IC12	503303426	IC, " 5V "	AN7805F	
CR1~10	503100021	Di, Si V_R = 200V I_F = 1.1A	V06C	
CR12, 13	"	Di, " " "	"	
CR15, 16	"	Di, " " "	"	
CR18, 19	"	Di, " " "	"	
CR21~24	503100022	Di, Diode Bridge	W02M	
C1, 2	502103105	C, Electrolytic 470μF 25WV	ECEA1EU471	
C3	502103126	C, " 1000μF 16WV	ECEA1CU102	
C4, 5	502103105	C, " 470μF 25WV	ECEA1EU471	
C6	502103126	C, " 1000μF 16WV	ECEA1CU102	
C7, 8	502103105	C, " 470μF 25WV	ECEA1EU471	
C9	502103126	C, " 1000μF 16WV	ECEA1CU102	
C10, 11	502103105	C, " 470μF 25WV	ECEA1EU471	
C12	502103126	C, " 1000μF 16WV	ECEA1CU102	
C13~36	502403007	C, Ceramic 0.01μF 50WV	ROU06F103Z-L45AC	
C37~48	502403127	C, Electrolytic 33μF 25WV	ECEA1EU330	
P1	513400075	Connector 10 pin	HNC2-2.5P-10DS	
P2	513400078	" 12 pin	HNC2-2.5P-12DS	
P3	513400075	" 10 pin	HNC2-2.5P-10DS	
P4	513400078	" 12 pin	HNC2-2.5P-12DS	
P.C.B.	218500020	Printed Circuit Board	IF85-02A	


IC1
1
2
3
4
No.
Signal
1
FT1
2
FT2
3
FT3
4
FT4

8613 Mark Sensor (1/1)

Figure	Part No.	Description	Type	Remarks
IC1	503303945	IC, Op-Amp Dual	NJL5142ELA	
P.C.B.	511861312	Printed Circuit Board	PR8700-12B	
P1	513400077	Connector, Pin Header 4P	HNC2-2.5P4DSL	

Billy
714 770-6010
EXT 102

Old board
Mark 10
Version 2.0 - 4.06
51-52

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